

If you plan to submit a bid directly to the Department of Transportation

PREQUALIFICATION

Any contractor who desires to become pre-qualified to bid on work advertised by IDOT must submit the properly completed pre-qualification forms to the Bureau of Construction no later than 4:30 p.m. prevailing time twenty-one days prior to the letting of interest. This pre-qualification requirement applies to first time contractors, contractors renewing expired ratings, contractors maintaining continuous pre-qualification or contractors requesting revised ratings. To be eligible to bid, existing pre-qualification ratings must be effective through the date of letting.

REQUESTS FOR AUTHORIZATION TO BID

Contractors wanting to bid on items included in a particular letting must submit the properly completed "Request for Authorization to Bid/or Not For Bid Status" (BDE 124INT) and the ORIGINAL "Affidavit of Availability" (BC 57) to the proper office no later than 4:30 p.m. prevailing time, three (3) days prior to the letting date.

WHO CAN BID ?

Bids will be accepted from only those companies that request and receive written **Authorization to Bid** from IDOT's Central Bureau of Construction.

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?: When a prospective prime bidder submits a "Request for Authorization to Bid/or Not For Bid Status"(BDE 124INT) he/she must indicate at that time which items are being requested For Bidding purposes. Only those items requested For Bidding will be analyzed. After the request has been analyzed, the bidder will be issued an **Authorization to Bid or Not for Bid Report**, approved by the Central Bureau of Construction that indicates which items have been approved For Bidding. If **Authorization to Bid** cannot be approved, the **Authorization to Bid or Not for Bid Report** will indicate the reason for denial.

ABOUT AUTHORIZATION TO BID: Firms that have not received an authorization form within a reasonable time of complete and correct original document submittal should contact the department as to status. This is critical in the week before the letting. These documents must be received three days before the letting date. Firms unsure as to authorization status should call the Prequalification Section of the Bureau of Construction at the number listed at the end of these instructions.

ADDENDA AND REVISIONS: It is the contractor's responsibility to determine which, if any, addenda or revisions pertain to any project they may be bidding. Failure to incorporate all relevant addenda or revisions may cause the bid to be declared unacceptable.

Each addendum will be placed with the contract number. Addenda and revisions will also be placed on the Addendum/Revision Checklist and each subscription service subscriber will be notified by e-mail of each addendum and revision issued.

The Internet is the Department's primary way of doing business. The subscription server e-mails are an added courtesy the Department provides. It is suggested that bidders check IDOT's website at <http://www.dot.il.gov/desenv/delett.html> before submitting final bid information.

IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.

Addenda Questions may be directed to the Contracts Office at (217)782-7806 or D&Econtracts@dot.il.gov

Technical Questions about downloading these files may be directed to Tim Garman (217)524-1642 or Timothy.Garman@illinois.gov.

WHAT MUST BE INCLUDED WHEN BIDS ARE SUBMITTED?: Bidders need not return the entire proposal when bids are submitted. That portion of the proposal that must be returned includes the following:

1. All documents from the Proposal Cover Sheet through the Proposal Bid Bond
2. Other special documentation and/or information that may be required by the contract special provisions

All proposal documents, including Proposal Guaranty Checks or Proposal Bid Bonds, should be stapled together to prevent loss when bids are processed by IDOT personnel.

ABOUT SUBMITTING BIDS: It is recommended that bidders deliver bids in person to insure they arrive at the proper location prior to the time specified for the receipt of bids. Any bid received at the place of letting after the time specified will not be accepted.

WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?

Questions Regarding	Call
Prequalification and/or Authorization to Bid	217/782-3413
Preparation and submittal of bids	217/782-7806
Mailing of plans and proposals	217/782-7806

ADDENDUMS AND REVISIONS TO THE PROPOSAL FORMS

Planholders should verify that they have received and incorporated any addendum and/or revision prior to submitting their bid. Failure by the bidder to include an addendum or revision could result in a bid being rejected as irregular.

76

RETURN WITH BID

Proposal Submitted By
Name
Address
City

Letting September 17, 2010

BIDDERS NEED NOT RETURN THE ENTIRE PROPOSAL
(See instructions inside front cover)

NOTICE TO PROSPECTIVE BIDDERS

This proposal can be used for bidding purposes by only those companies that request and receive written AUTHORIZATION TO BID from IDOT's Central Bureau of Construction.
(SEE INSTRUCTIONS ON THE INSIDE OF COVER)

Notice to Bidders, Specifications, Proposal, Contract and Contract Bond



**Illinois Department
of Transportation**

Springfield, Illinois 62764

**Contract No. 60L34
Various Counties
Section 2010-053-I
District 1 Construction Funds
Various Routes**

PLEASE MARK THE APPROPRIATE BOX BELOW:

- A Bid Bond is included.
- A Cashier's Check or a Certified Check is included.

Plans Included
Herein

Prepared by

S

Checked by

(Printed by authority of the State of Illinois)

INSTRUCTIONS

ABOUT IDOT PROPOSALS: All proposals issued by IDOT are potential bidding proposals. Each proposal contains all Certifications and Affidavits, a Proposal Signature Sheet and a Proposal Bid Bond required for Prime Contractors to submit a bid after written **Authorization to Bid** has been issued by IDOT's Central Bureau of Construction. In addition, this proposal contains new statutory requirements applicable to the use of subcontractors and, in particular, includes the State Required Ethical Standards Governing Subcontractors to be signed and incorporated into all subcontracts.

WHO CAN BID?: Bids will be accepted from only those companies that request and receive written **Authorization to Bid** from IDOT's Central Bureau of Construction. To request authorization, a potential bidder must complete and submit Part B of the Request for Authorization to Bid/or Not For Bid Status form (BDE 124 INT) and submit an original Affidavit of Availability (BC 57).

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?: When a prospective prime bidder submits a "**Authorization to Bid or Not for Bid**" form, he/she must indicate at that time which items are being requested For Bidding purposes. Only those items requested For Bidding will be analyzed. After the request has been analyzed, the bidder will be issued a **Authorization to Bid or Not for Bid Report**, approved by the Central Bureau of Construction, that indicates which items have been approved For Bidding. If **Authorization to Bid** cannot be approved, the **Authorization to Bid or Not for Bid Report** will indicate the reason for denial. If a contractor has requested to bid but has not received a **Authorization to Bid or Not for Bid Report**, they should contact the Central Bureau of Construction in advance of the letting date.

WHAT MUST BE INCLUDED WHEN BIDS ARE SUBMITTED?: Bidders need not return the entire proposal when bids are submitted. That portion of the proposal that must be returned includes the following:

1. All documents from the Proposal Cover Sheet through the Proposal Bid Bond
2. Other special documentation and/or information that may be required by the contract special provisions

All proposal documents, including Proposal Guaranty Checks or Proposal Bid Bonds, should be stapled together to prevent loss when bids are processed by IDOT personnel.

ABOUT SUBMITTING BIDS: It is recommended that bidders deliver bids in person to insure they arrive at the proper location prior to the time specified for the receipt of bids. Any bid received at the place of letting after the time specified will not be accepted.

WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?

Questions Regarding	Call
Prequalification and/or Authorization to Bid	217/782-3413
Preparation and submittal of bids	217/782-7806

RETURN WITH BID



PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of _____

_____ a
Taxpayer Identification Number (Mandatory) _____

for the improvement identified and advertised for bids in the Invitation for Bids as:

**Contract No. 60L34
Various Counties
Section 2010-053-I
Various Routes
District 1 Construction Funds**

Annual maintenance of traffic signals, highway lighting, advanced systems, pump stations, surveillance and other electrical systems in District One.

2. The undersigned bidder will furnish all labor, material and equipment to complete the above described project in a good and workmanlike manner as provided in the contract documents provided by the Department of Transportation. This proposal will become part of the contract and the terms and conditions contained in the contract documents shall govern performance and payments.

RETURN WITH BID

6. **COMBINATION BIDS.** The undersigned further agrees that if awarded the contract for the sections contained in the following combination, he/she will perform the work in accordance with the requirements of each individual proposal comprising the combination bid specified in the schedule below, and that the combination bid shall be prorated against each section in proportion to the bid submitted for the same. If an error is found to exist in the gross sum bid for one or more of the individual sections included in a combination, the combination bid shall be corrected as provided in the specifications.

When a combination bid is submitted, the schedule below must be completed in each proposal comprising the combination.

If alternate bids are submitted for one or more of the sections comprising the combination, a combination bid must be submitted for each alternate.

Schedule of Combination Bids

Combination No.	Sections Included in Combination	Combination Bid	
		Dollars	Cents

7. **SCHEDULE OF PRICES.** The undersigned bidder submits herewith, in accordance with the rules and instructions, a schedule of prices for the items of work for which bids are sought. The unit prices bid are in U.S. dollars and cents, and all extensions and summations have been made. The bidder understands that the quantities appearing in the bid schedule are approximate and are provided for the purpose of obtaining a gross sum for the comparison of bids. If there is an error in the extension of the unit prices, the unit prices shall govern. Payment to the contractor awarded the contract will be made only for actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as provided elsewhere in the contract.
8. **AUTHORITY TO DO BUSINESS IN ILLINOIS.** Section 20-43 of the Illinois Procurement Code (30 ILCS 500/20-43) provides that a person (other than an individual acting as a sole proprietor) must be a legal entity authorized to do business in the State of Illinois prior to submitting the bid.

9. **The services of a subcontractor will or may be used.**

Check box Yes
 Check box No

For known subcontractors with subcontracts with an annual value of more than \$25,000, the contract shall include their name, address, and the dollar allocation for each subcontractor.

CONTRACT NUMBER

60L34

THIS IS THE TOTAL BID

\$ _____

NOTES:

- 1. Each PAY ITEM should have a UNIT PRICE and a TOTAL PRICE.**
- 2. The UNIT PRICE shall govern if no TOTAL PRICE is shown or if there is a discrepancy between the product of the UNIT PRICE multiplied by the QUANTITY.**
- 3. If a UNIT PRICE is omitted, the TOTAL PRICE will be divided by the QUANTITY in order to establish a UNIT PRICE.**
- 4. A bid may be declared UNACCEPTABLE if neither a unit price nor a total price is shown.**

RETURN WITH BID

STATE REQUIRED ETHICAL STANDARDS GOVERNING CONTRACT PROCUREMENT: ASSURANCES, CERTIFICATIONS AND DISCLOSURES

I. GENERAL

A. Article 50 of the Illinois Procurement Code establishes the duty of all State chief procurement officers, State purchasing officers, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.

B. In order to comply with the provisions of Article 50 and to carry out the duty established therein, all bidders are to adhere to ethical standards established for the procurement process, and to make such assurances, disclosures and certifications required by law. Except as otherwise required in subsection III, paragraphs J-M, by execution of the Proposal Signature Sheet, the bidder indicates that each of the mandated assurances have been read and understood, that each certification is made and understood, and that each disclosure requirement has been understood and completed.

C. In addition to all other remedies provided by law, failure to comply with any assurance, failure to make any disclosure or the making of a false certification shall be grounds for the chief procurement officer to void the contract, or subcontract, and may result in the suspension or debarment of the bidder or subcontractor.

II. ASSURANCES

The assurances hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder.

A. Conflicts of Interest

1. The Illinois Procurement Code provides in pertinent part:

Section 50-13. Conflicts of Interest.

(a) Prohibition. It is unlawful for any person holding an elective office in this State, holding a seat in the General Assembly, or appointed to or employed in any of the offices or agencies of state government and who receives compensation for such employment in excess of 60% of the salary of the Governor of the State of Illinois, or who is an officer or employee of the Capital Development Board or the Illinois Toll Highway Authority, or who is the spouse or minor child of any such person to have or acquire any contract, or any direct pecuniary interest in any contract therein, whether for stationery, printing, paper, or any services, materials, or supplies, that will be wholly or partially satisfied by the payment of funds appropriated by the General Assembly of the State of Illinois or in any contract of the Capital Development Board or the Illinois Toll Highway authority.

(b) Interests. It is unlawful for any firm, partnership, association or corporation, in which any person listed in subsection (a) is entitled to receive (i) more than 7 1/2% of the total distributable income or (ii) an amount in excess of the salary of the Governor, to have or acquire any such contract or direct pecuniary interest therein.

(c) Combined interests. It is unlawful for any firm, partnership, association, or corporation, in which any person listed in subsection (a) together with his or her spouse or minor children is entitled to receive (i) more than 15%, in the aggregate, of the total distributable income or (ii) an amount in excess of 2 times the salary of the Governor, to have or acquire any such contract or direct pecuniary interest therein.

(d) Securities. Nothing in this Section invalidates the provisions of any bond or other security previously offered or to be offered for sale or sold by or for the State of Illinois.

(e) Prior interests. This Section does not affect the validity of any contract made between the State and an officer or employee of the State or member of the General Assembly, his or her spouse, minor child or any combination of those persons if that contract was in existence before his or her election or employment as an officer, member, or employee. The contract is voidable, however, if it cannot be completed within 365 days after the officer, member, or employee takes office or is employed.

The current salary of the Governor is \$177,412.00. Sixty percent of the salary is \$106,447.20.

RETURN WITH BID

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-13, or that an effective exemption has been issued by the Board of Ethics to any individual subject to the Section 50-13 prohibitions pursuant to the provisions of Section 50-20 of the Code and Executive Order Number 3 (1998). Information concerning the exemption process is available from the Department upon request.

B. Negotiations

1. The Illinois Procurement Code provides in pertinent part:

Section 50-15. Negotiations.

(a) It is unlawful for any person employed in or on a continual contractual relationship with any of the offices or agencies of State government to participate in contract negotiations on behalf of that office or agency with any firm, partnership, association, or corporation with whom that person has a contract for future employment or is negotiating concerning possible future employment.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-15, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

C. Inducements

1. The Illinois Procurement Code provides:

Section 50-25. Inducement. Any person who offers or pays any money or other valuable thing to any person to induce him or her not to bid for a State contract or as recompense for not having bid on a State contract is guilty of a Class 4 felony. Any person who accepts any money or other valuable thing for not bidding for a State contract or who withholds a bid in consideration of the promise for the payment of money or other valuable thing is guilty of a Class 4 felony.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-25, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

D. Revolving Door Prohibition

1. The Illinois Procurement Code provides:

Section 50-30. Revolving door prohibition. Chief procurement officers, State purchasing officers, procurement compliance monitors, their designees whose principal duties are directly related to State procurement, and executive officers confirmed by the Senate are expressly prohibited for a period of 2 years after terminating an affected position from engaging in any procurement activity relating to the State agency most recently employing them in an affected position for a period of at least 6 months. The prohibition includes, but is not limited to: lobbying the procurement process; specifying; bidding; proposing bid, proposal, or contract documents; on their own behalf or on behalf of any firm, partnership, association, or corporation. This Section applies only to persons who terminate an affected position on or after January 15, 1999.

2. The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-30, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

E. Reporting Anticompetitive Practices

1. The Illinois Procurement Code provides:

Section 50-40. Reporting anticompetitive practices. When, for any reason, any vendor, bidder, contractor, chief procurement officer, State purchasing officer, designee, elected official, or State employee suspects collusion or other anticompetitive practice among any bidders, offerors, contractors, proposers, or employees of the State, a notice of the relevant facts shall be transmitted to the Attorney General and the chief procurement officer.

2. The bidder assures the Department that it has not failed to report any relevant facts concerning the practices addressed in Section 50-40 which may involve the contract for which the bid is submitted.

F. Confidentiality

1. The Illinois Procurement Code provides:

Section 50-45. Confidentiality. Any chief procurement officer, State purchasing officer, designee, or executive officer who willfully uses or allows the use of specifications, competitive bid documents, proprietary competitive information, proposals, contracts, or selection information to compromise the fairness or integrity of the procurement, bidding, or contract process shall be subject to immediate dismissal, regardless of the Personnel code, any contract, or any collective bargaining agreement, and may in addition be subject to criminal prosecution.

2. The bidder assures the Department that it has no knowledge of any fact relevant to the practices addressed in Section 50-45 which may involve the contract for which the bid is submitted.

RETURN WITH BID

G. Insider Information

1. The Illinois Procurement Act provides:

Section 50-50. Insider information. It is unlawful for any current or former elected or appointed State official or State employee to knowingly use confidential information available only by virtue of that office or employment for actual or anticipated gain for themselves or another person.

2. The bidder assures the Department that it has no knowledge of any facts relevant to the practices addressed in Section 50-50 which may involve the contract for which the bid is submitted.

III. CERTIFICATIONS

The certifications hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. Section 50-2 of the Illinois Procurement Code provides that every person that has entered into a multi-year contract and every subcontractor with a multi-year subcontract shall certify, by July 1 of each fiscal year covered by the contract after the initial fiscal year, to the responsible chief procurement officer whether it continues to satisfy the requirements of Article 50 pertaining to the eligibility for a contract award. If a contractor or subcontractor is not able to truthfully certify that it continues to meet all requirements, it shall provide with its certification a detailed explanation of the circumstances leading to the change in certification status. A contractor or subcontractor that makes a false statement material to any given certification required under Article 50 is, in addition to any other penalties or consequences prescribed by law, subject to liability under the Whistleblower Reward and Protection Act for submission of a false claim.

A. Bribery

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

- (a) Prohibition. No person or business shall be awarded a contract or subcontract under this Code who:

- (1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or

- (2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.

- (b) Businesses. No business shall be barred from contracting with any unit of State or local government, or subcontracting under such a contract, as a result of a conviction under this Section of any employee or agent of the business if the employee or agent is no longer employed by the business and:

- (1) the business has been finally adjudicated not guilty; or

- (2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 1961.

- (c) Conduct on behalf of business. For purposes of this Section, when an official, agent, or employee of a business committed the bribery or attempted bribery on behalf of the business and in accordance with the direction or authorization of a responsible official of the business, the business shall be chargeable with the conduct.

- (d) Certification. Every bid submitted to and contract executed by the State, and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the contractor or the subcontractor, respectively, that the contractor or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any certifications required by this Section are false. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

2. The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50.5.

B. Felons

1. The Illinois Procurement Code provides:

Section 50-10. Felons. Unless otherwise provided, no person or business convicted of a felony shall do business with the State of Illinois or any State agency, or enter into a subcontract, from the date of conviction until 5 years after the date of completion of the sentence for that felony, unless no person held responsible by a prosecutorial office for the facts upon which the conviction was based continues to have any involvement with the business.

2. Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any of the certifications required by this Section are false.

RETURN WITH BID

C. Debt Delinquency

1. The Illinois Procurement Code provides:

Section 50-11 and 50-12. Debt Delinquency.

The contractor or bidder or subcontractor, respectively, certifies that it, or any affiliate, is not barred from being awarded a contract or subcontract under the Procurement Code. Section 50-11 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it knows or should know that it, or any affiliate, is delinquent in the payment of any debt to the State as defined by the Debt Collection Board. Section 50-12 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it, or any affiliate, has failed to collect and remit Illinois Use Tax on all sales of tangible personal property into the State of Illinois in accordance with the provisions of the Illinois Use Tax Act. The bidder or contractor or subcontractor, respectively, further acknowledges that the chief procurement officer may declare the related contract void if this certification is false or if the bidder, contractor, or subcontractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

D. Prohibited Bidders, Contractors and Subcontractors

1. The Illinois Procurement Code provides:

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-12 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Procurement Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the chief procurement officer may declare the contract void if this certification is false.

F. Educational Loan

1. Section 3 of the Educational Loan Default Act provides:

§ 3. No State agency shall contract with an individual for goods or services if that individual is in default, as defined in Section 2 of this Act, on an educational loan. Any contract used by any State agency shall include a statement certifying that the individual is not in default on an educational loan as provided in this Section.

2. The bidder, if an individual as opposed to a corporation, partnership or other form of business organization, certifies that the bidder is not in default on an educational loan as provided in Section 3 of the Act.

G. Bid-Rigging/Bid Rotating

1. Section 33E-11 of the Criminal Code of 1961 provides:

§ 33E-11. (a) Every bid submitted to and public contract executed pursuant to such bid by the State or a unit of local government shall contain a certification by the prime contractor that the prime contractor is not barred from contracting with any unit of State or local government as a result of a violation of either Section 33E-3 or 33E-4 of this Article. The State and units of local government shall provide the appropriate forms for such certification.

- (b) A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

A violation of Section 33E-3 would be represented by a conviction of the crime of bid-rigging which, in addition to Class 3 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be barred for 5 years from the date of conviction from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

RETURN WITH BID

A violation of Section 33E-4 would be represented by a conviction of the crime of bid-rotating which, in addition to Class 2 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be permanently barred from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

2. The bidder certifies that it is not barred from contracting with the Department by reason of a violation of either Section 33E-3 or Section 33E-4.

H. International Anti-Boycott

1. Section 5 of the International Anti-Boycott Certification Act provides:

§ 5. State contracts. Every contract entered into by the State of Illinois for the manufacture, furnishing, or purchasing of supplies, material, or equipment or for the furnishing of work, labor, or services, in an amount exceeding the threshold for small purchases according to the purchasing laws of this State or \$10,000.00, whichever is less, shall contain certification, as a material condition of the contract, by which the contractor agrees that neither the contractor nor any substantially-owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the U.S. Export Administration Act of 1979 or the regulations of the U.S. Department of Commerce promulgated under that Act.

2. The bidder makes the certification set forth in Section 5 of the Act.

I. Drug Free Workplace

1. The Illinois "Drug Free Workplace Act" applies to this contract and it is necessary to comply with the provisions of the "Act" if the contractor is a corporation, partnership, or other entity (including a sole proprietorship) which has 25 or more employees.

2. The bidder certifies that if awarded a contract in excess of \$5,000 it will provide a drug free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance, including cannabis, is prohibited in the contractor's workplace; specifying the actions that will be taken against employees for violations of such prohibition; and notifying the employee that, as a condition of employment on such contract, the employee shall abide by the terms of the statement, and notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after such conviction.

(b) Establishing a drug free awareness program to inform employees about the dangers of drug abuse in the workplace; the contractor's policy of maintaining a drug free workplace; any available drug counseling, rehabilitation, and employee assistance programs; and the penalties that may be imposed upon employees for drug violations.

(c) Providing a copy of the statement required by subparagraph (1) to each employee engaged in the performance of the contract and to post the statement in a prominent place in the workplace.

(d) Notifying the Department within ten (10) days after receiving notice from an employee or otherwise receiving actual notice of the conviction of an employee for a violation of any criminal drug statute occurring in the workplace.

(e) Imposing or requiring, within 30 days after receiving notice from an employee of a conviction or actual notice of such a conviction, an appropriate personnel action, up to and including termination, or the satisfactory participation in a drug abuse assistance or rehabilitation program approved by a federal, state or local health, law enforcement or other appropriate agency.

(f) Assisting employees in selecting a course of action in the event drug counseling, treatment, and rehabilitation is required and indicating that a trained referral team is in place.

(g) Making a good faith effort to continue to maintain a drug free workplace through implementation of the actions and efforts stated in this certification.

RETURN WITH BID

J. Disclosure of Business Operations in Iran

Section 50-36 of the Illinois Procurement Code, 30ILCS 500/50-36 provides that each bid, offer, or proposal submitted for a State contract shall include a disclosure of whether or not the Company acting as the bidder, offeror, or proposing entity, or any of its corporate parents or subsidiaries, within the 24 months before submission of the bid, offer, or proposal had business operations that involved contracts with or provision of supplies or services to the Government of Iran, companies in which the Government of Iran has any direct or indirect equity share, consortiums or projects commissioned by the Government of Iran, or companies involved in consortiums or projects commissioned by the Government of Iran and either of the following conditions apply:

- (1) More than 10% of the Company's revenues produced in or assets located in Iran involve oil-related activities or mineral-extraction activities; less than 75% of the Company's revenues produced in or assets located in Iran involve contracts with or provision of oil-related or mineral-extraction products or services to the Government of Iran or a project or consortium created exclusively by that government; and the Company has failed to take substantial action.
- (2) The Company has, on or after August 5, 1996, made an investment of \$20 million or more, or any combination of investments of at least \$10 million each that in the aggregate equals or exceeds \$20 million in any 12-month period, which directly or significantly contributes to the enhancement of Iran's ability to develop petroleum resources of Iran.

The terms "Business operations", "Company", "Mineral-extraction activities", "Oil-related activities", "Petroleum resources", and "Substantial action" are all defined in the Code.

Failure to make the disclosure required by the Code shall cause the bid, offer or proposal to be considered not responsive. The disclosure will be considered when evaluating the bid, offer, or proposal or awarding the contract. The name of each Company disclosed as doing business or having done business in Iran will be provided to the State Comptroller.

Check the appropriate statement:

Company has no business operations in Iran to disclose.

Company has business operations in Iran as disclosed the attached document.

K. Apprenticeship and Training Certification (Does not apply to federal aid projects)

In accordance with the provisions of Section 30-22 (6) of the Illinois Procurement Code, the bidder certifies that it is a participant, either as an individual or as part of a group program, in the approved apprenticeship and training programs applicable to each type of work or craft that the bidder will perform with its own forces. The bidder further certifies for work that will be performed by subcontract that each of its subcontractors submitted for approval either (a) is, at the time of such bid, participating in an approved, applicable apprenticeship and training program; or (b) will, prior to commencement of performance of work pursuant to this contract, begin participation in an approved apprenticeship and training program applicable to the work of the subcontract. The Department, at any time before or after award, may require the production of a copy of each applicable Certificate of Registration issued by the United States Department of Labor evidencing such participation by the contractor and any or all of its subcontractors. Applicable apprenticeship and training programs are those that have been approved and registered with the United States Department of Labor. The bidder shall list in the space below, the official name of the program sponsor holding the Certificate of Registration for all of the types of work or crafts in which the bidder is a participant and that will be performed with the bidder's forces. Types of work or craft work that will be subcontracted shall be included and listed as subcontract work. The list shall also indicate any type of work or craft job category that does not have an applicable apprenticeship or training program. **The bidder is responsible for making a complete report and shall make certain that each type of work or craft job category that will be utilized on the project as reported on the Construction Employee Workforce Projection (Form BC-1256) and returned with the bid is accounted for and listed.**

The requirements of this certification and disclosure are a material part of the contract, and the contractor shall require this certification provision to be included in all approved subcontracts. In order to fulfill this requirement, it shall not be necessary that an applicable program sponsor be currently taking or that it will take applications for apprenticeship, training or employment during the performance of the work of this contract.

TO BE RETURNED WITH BID

L. Political Contributions and Registration with the State Board of Elections

Sections 20-160 and 50-37 of the Illinois Procurement Code regulate political contributions from business entities and any affiliated entities or affiliated persons bidding on or contracting with the state. Generally under Section 50-37, any business entity, and any affiliated entity or affiliated person of the business entity, whose current year contracts with all state agencies exceed an awarded value of \$50,000, are prohibited from making any contributions to any political committees established to promote the candidacy of the officeholder responsible for the awarding of the contracts or any other declared candidate for that office for the duration of the term of office of the incumbent officeholder or a period 2 years after the termination of the contract, whichever is longer. Any business entity and affiliated entities or affiliated persons whose state contracts in the current year do not exceed an awarded value of \$50,000, but whose aggregate pending bids and proposals on state contracts exceed \$50,000, either alone or in combination with contracts not exceeding \$50,000, are prohibited from making any political contributions to any political committee established to promote the candidacy of the officeholder responsible for awarding the pending contract during the period beginning on the date the invitation for bids or request for proposals is issued and ending on the day after the date of award or selection if the entity was not awarded or selected. Section 20-160 requires certification of registration of affected business entities in accordance with procedures found in Section 9-35 of The Election Code.

By submission of a bid, the contractor business entity acknowledges and agrees that it has read and understands Sections 20-160 and 50-37 of the Illinois Procurement Code, and that it makes the following certification:

The undersigned business entity certifies that it has registered as a business with the State Board of Elections and acknowledges a continuing duty to update the registration in accordance with the above referenced statutes. A copy of the certificate of registration shall be submitted with the bid. The bidder is cautioned that the Department will not award a contract without submission of the certificate of registration.

These requirements and compliance with the above referenced statutory sections are a material part of the contract, and any breach thereof shall be cause to void the contract under Section 50-60 of the Illinois Procurement Code. This provision does not apply to Federal-aid contracts.

M. Lobbyist Disclosure

Section 50-38 of the Illinois Procurement Code requires that any bidder or offeror on a State contract that hires a person required to register under the Lobbyist Registration Act to assist in obtaining a contract shall:

- (i) Disclose all costs, fees, compensation, reimbursements, and other remunerations paid or to be paid to the lobbyist related to the contract,
- (ii) Not bill or otherwise cause the State of Illinois to pay for any of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration, and
- (iii) Sign a verification certifying that none of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration were billed to the State.

This information, along with all supporting documents, shall be filed with the agency awarding the contract and with the Secretary of State. The chief procurement officer shall post this information, together with the contract award notice, in the online Procurement Bulletin.

Pursuant to Subsection (c) of this Section, no person or entity shall retain a person or entity to attempt to influence the outcome of a procurement decision made under the Procurement Code for compensation contingent in whole or in part upon the decision or procurement. Any person who violates this subsection is guilty of a business offense and shall be fined not more than \$10,000.

Bidder acknowledges that it is required to disclose the hiring of any person required to register pursuant to the Illinois Lobbyist Registration Act (25 ILCS 170) in connection with this contract.

Bidder has not hired any person required to register pursuant to the Illinois Lobbyist Registration Act in connection with this contract.

Or

Bidder has hired the following persons required to register pursuant to the Illinois Lobbyist Registration Act in connection with the contract:

Name and address of person: _____
All costs, fees, compensation, reimbursements and other remuneration paid to said person: _____

RETURN WITH BID

IV. DISCLOSURES

- A. The disclosures hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. The bidder further certifies that the Department has received the disclosure forms for each bid.

The chief procurement officer may void the bid, contract, or subcontract, respectively, if it is later determined that the bidder or subcontractor rendered a false or erroneous disclosure. A contractor or subcontractor may be suspended or debarred for violations of the Procurement Code. Furthermore, the chief procurement officer may void the contract and the surety providing the performance bond shall be responsible for completion of the contract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all bids of more than \$25,000 shall be accompanied by disclosure of the financial interests of the bidder. This disclosed information for the successful bidder, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the contract. Furthermore, pursuant to Section 5-5, the Procurement Policy Board may review a proposal, bid, or contract and issue a recommendation to void a contract or reject a proposal or bid based on any violation of the Procurement Code or the existence of a conflict of interest as provided in subsections (b) and (d) of Section 50-35.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the bidding entity or its parent entity, whichever is less, unless the contractor or bidder is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 400 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each person making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each person making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.

The current annual salary of the Governor is \$177,412.00

In addition, all disclosures shall indicate any other current or pending contracts, proposals, leases, or other ongoing procurement relationships the bidding entity has with any other unit of state government and shall clearly identify the unit and the contract, proposal, lease, or other relationship.

2. Disclosure Forms. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. Subject individuals should be covered each by one form. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies. **The forms must be included with each bid.**

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the bidder is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 400 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on Form A must be signed and dated by a person that is authorized to execute contracts for the bidding company. Note: These questions are for assistance only and are not required to be completed.

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES ___ NO ___
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than 60% of the annual salary of the Governor? YES ___ NO ___
3. Does anyone in your organization receive more than 60% of the annual salary of the Governor of the bidding entity's or parent entity's distributive income? YES ___ NO ___

(Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.)

4. Does anyone in your organization receive greater than 5% of the bidding entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES ___ NO ___

(Note: Only one set of forms needs to be completed per person per bid even if a specific individual would require a yes answer to more than one question.)

A "YES" answer to any of these questions requires the completion of Form A. The bidder must determine each individual in the bidding entity or the bidding entity's parent company that would cause the questions to be answered "Yes". Each form must be signed and dated by a person that is authorized to execute contracts for your organization. **Photocopied or stamped signatures are not acceptable.** The person signing can be, but does not have to be, the person for which the form is being completed. The bidder is responsible for the accuracy of any information provided.

If the answer to each of the above questions is "NO", then the NOT APPLICABLE STATEMENT of Form A must be signed and dated by a person that is authorized to execute contracts for your company.

RETURN WITH BID

Form B: Instructions for Identifying Other Contracts & Procurement Related Information

Disclosure Form B must be completed for each bid submitted by the bidding entity. *Note: Checking the NOT APPLICABLE STATEMENT on Form A does not allow the bidder to ignore Form B. Form B must be completed, checked, and dated or the bidder may be considered nonresponsive and the bid will not be accepted.*

The Bidder shall identify, by checking Yes or No on Form B, whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other (non-IDOT) State of Illinois agency. If "No" is checked, the bidder only needs to complete the check box on the bottom of Form B. If "Yes" is checked, the bidder must do one of the following:

Option I: If the bidder did not submit an Affidavit of Availability to obtain authorization to bid, the bidder must list all non-IDOT State of Illinois agency pending contracts, leases, bids, proposals, and other ongoing procurement relationships. These items may be listed on Form B or on an attached sheet(s). Do not include IDOT contracts. Contracts with cities, counties, villages, etc. are not considered State of Illinois agency contracts and are not to be included. Contracts with other State of Illinois agencies such as the Department of Natural Resources or the Capital Development Board must be included. Bidders who submit Affidavits of Availability are suggested to use Option II.

Option II: If the bidder is required and has submitted an Affidavit of Availability in order to obtain authorization to bid, the bidder may write or type "See Affidavit of Availability" which indicates that the Affidavit of Availability is incorporated by reference and includes all non-IDOT State of Illinois agency pending contracts, leases, bids, proposals, and other ongoing procurement relationships. For any contracts that are not covered by the Affidavit of Availability, the bidder must identify them on Form B or on an attached sheet(s). These might be such things as leases.

**ILLINOIS DEPARTMENT
OF TRANSPORTATION**

**Form A
Financial Information &
Potential Conflicts of Interest
Disclosure**

Contractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Vendors desiring to enter into a contract with the State of Illinois must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for bids in excess of \$25,000, and for all open-ended contracts. **A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.**

The current annual salary of the Governor is \$177,412.00.

DISCLOSURE OF FINANCIAL INFORMATION

1. Disclosure of Financial Information. The individual named below has an interest in the BIDDER (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than 60% of the annual salary of the Governor. **(Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)**

FOR INDIVIDUAL (type or print information)	
NAME:	_____
ADDRESS	_____
Type of ownership/distributable income share:	
stock _____ sole proprietorship _____ Partnership _____ other: (explain on separate sheet):	
% or \$ value of ownership/distributable income share:	_____

2. Disclosure of Potential Conflicts of Interest. Check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If the answer to any question is "Yes", please attach additional pages and describe.

(a) State employment, currently or in the previous 3 years, including contractual employment of services.
Yes ___ No ___

If your answer is yes, please answer each of the following questions.

1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___ No ___
2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, provide the name the State agency for which you are employed and your annual salary. _____

RETURN WITH BID

3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor?

Yes ___ No ___

4. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor?

Yes ___ No ___

-
- (b) State employment of spouse, father, mother, son, or daughter, including contractual employment services in the previous 2 years.

Yes ___ No ___

If your answer is yes, please answer each of the following questions.

1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois State Toll Highway Authority?

Yes ___ No ___

2. Is your spouse or any minor children currently appointed to or employed by any agency of the State of Illinois? If your spouse or minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, provide the name of your spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. _____

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, as of 7/1/07 are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor?

Yes ___ No ___

4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor?

Yes ___ No ___

-
- (c) Elective status; the holding of elective office of the State of Illinois, the government of the United States, any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois currently or in the previous 3 years.

Yes ___ No ___

-
- (d) Relationship to anyone holding elective office currently or in the previous 2 years; spouse, father, mother, son, or daughter.

Yes ___ No ___

-
- (e) Appointive office; the holding of any appointive government office of the State of Illinois, the United States of America, or any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois, which office entitles the holder to compensation in excess of the expenses incurred in the discharge of that office currently or in the previous 3 years.

Yes ___ No ___

-
- (f) Relationship to anyone holding appointive office currently or in the previous 2 years; spouse, father, mother, son, or daughter.

Yes ___ No ___

-
- (g) Employment, currently or in the previous 3 years, as or by any registered lobbyist of the State government.

Yes ___ No ___

RETURN WITH BID/OFFER

(h) Relationship to anyone who is or was a registered lobbyist in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___ No ___

(i) Compensated employment, currently or in the previous 3 years, by any registered election or reelection committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections. Yes ___ No ___

(j) Relationship to anyone; spouse, father, mother, son, or daughter; who was a compensated employee in the last 2 years by any registered election or re-election committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections. Yes ___ No ___

2. Communication Disclosure.

Disclose the name and address of each lobbyist and other agent of the bidder or offeror who is not identified in Section 2 of this form, who is has communicated, is communicating, or may communicate with any State officer or employee concerning the bid or offer. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the process and throughout the term of the contract. If no person is identified, enter "None" on the line below:

Name and address of person(s): _____

RETURN WITH BID

4. Debarment Disclosure. For each of the persons identified under Sections 2 and 3 of this form, disclose whether any of the following has occurred within the previous 10 years: debarment from contracting with any governmental entity; professional licensure discipline; bankruptcies; adverse civil judgments and administrative findings; and criminal felony convictions. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the procurement process and term of the contract. If no person is identified, enter "None" on the line below:

Name of person(s): _____

Nature of disclosure: _____

APPLICABLE STATEMENT

This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page. Under penalty of perjury, I certify the contents of this disclosure to be true and accurate to the best of my knowledge.

Completed by: _____ Date _____
Signature of Individual or Authorized Representative

NOT APPLICABLE STATEMENT

Under penalty of perjury, I have determined that no individuals associated with this organization meet the criteria that would require the completion of this Form A.

This Disclosure Form A is submitted on behalf of the CONTRACTOR listed on the previous page.

_____ Date _____
Signature of Authorized Representative

The bidder has a continuing obligation to supplement these disclosures under Sec. 50-35 of the Procurement Code.

RETURN WITH BID

ILLINOIS DEPARTMENT
OF TRANSPORTATION

Form B
Other Contracts &
Procurement Related Information
Disclosure

Contractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for bids in excess of \$25,000, and for all open-ended contracts.

DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The BIDDER shall identify whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No ___

If "No" is checked, the bidder only needs to complete the signature box on the bottom of this page.

2. If "Yes" is checked. Identify each such relationship by showing State of Illinois agency name and other descriptive information such as bid or project number (attach additional pages as necessary). SEE DISCLOSURE FORM INSTRUCTIONS:

THE FOLLOWING STATEMENT MUST BE CHECKED

<input type="checkbox"/>	_____	_____
	Signature of Authorized Representative	Date

RETURN WITH BID

SPECIAL NOTICE TO CONTRACTORS

The following requirements of the Illinois Department of Human Rights' Rules and Regulations are applicable to bidders on all construction contracts advertised by the Illinois Department of Transportation:

CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION

- (a) All bidders on construction contracts shall complete and submit, along with and as part of their bids, a Bidder's Employee Utilization Form (Form BC-1256) setting forth a projection and breakdown of the total workforce intended to be hired and/or allocated to such contract work by the bidder including a projection of minority and female employee utilization in all job classifications on the contract project.
- (b) The Department of Transportation shall review the Employee Utilization Form, and workforce projections contained therein, of the contract awardee to determine if such projections reflect an underutilization of minority persons and/or women in any job classification in accordance with the Equal Employment Opportunity Clause and Section 7.2 of the Illinois Department of Human Rights' Rules and Regulations for Public Contracts adopted as amended on September 17, 1980. If it is determined that the contract awardee's projections reflect an underutilization of minority persons and/or women in any job classification, it shall be advised in writing of the manner in which it is underutilizing and such awardee shall be considered to be in breach of the contract unless, prior to commencement of work on the contract project, it submits revised satisfactory projections or an acceptable written affirmative action plan to correct such underutilization including a specific timetable geared to the completion stages of the contract.
- (c) The Department of Transportation shall provide to the Department of Human Rights a copy of the contract awardee's Employee Utilization Form, a copy of any required written affirmative action plan, and any written correspondence related thereto. The Department of Human Rights may review and revise any action taken by the Department of Transportation with respect to these requirements.

RETURN WITH BID

**Contract No. 60L34
Various Counties
Section 2010-053-I
Various Routes
District 1 Construction Funds**

PART II. WORKFORCE PROJECTION - continued

- B. Included in "Total Employees" under Table A is the total number of **new hires** that would be employed in the event the undersigned bidder is awarded this contract.

The undersigned bidder projects that: (number) _____ new hires would be recruited from the area in which the contract project is located; and/or (number) _____ new hires would be recruited from the area in which the bidder's principal office or base of operation is located.

- C. Included in "Total Employees" under Table A is a projection of numbers of persons to be employed directly by the undersigned bidder as well as a projection of numbers of persons to be employed by subcontractors.

The undersigned bidder estimates that (number) _____ persons will be directly employed by the prime contractor and that (number) _____ persons will be employed by subcontractors.

PART III. AFFIRMATIVE ACTION PLAN

- A. The undersigned bidder understands and agrees that in the event the foregoing minority and female employee utilization projection included under **PART II** is determined to be an underutilization of minority persons or women in any job category, and in the event that the undersigned bidder is awarded this contract, he/she will, prior to commencement of work, develop and submit a written Affirmative Action Plan including a specific timetable (geared to the completion stages of the contract) whereby deficiencies in minority and/or female employee utilization are corrected. Such Affirmative Action Plan will be subject to approval by the contracting agency and the **Department of Human Rights**.
- B. The undersigned bidder understands and agrees that the minority and female employee utilization projection submitted herein, and the goals and timetable included under an Affirmative Action Plan if required, are deemed to be part of the contract specifications.

Company _____ Telephone Number _____

Address _____

NOTICE REGARDING SIGNATURE

The Bidder's signature on the Proposal Signature Sheet will constitute the signing of this form. The following signature block needs to be completed if revisions are required.

Signature: _____ Title: _____ Date: _____

- Instructions: All tables must include subcontractor personnel in addition to prime contractor personnel.
- Table A - Include both the number of employees that would be hired to perform the contract work and the total number currently employed (Table B) that will be allocated to contract work, and include all apprentices and on-the-job trainees. The "Total Employees" column should include all employees including all minorities, apprentices and on-the-job trainees to be employed on the contract work.
 - Table B - Include all employees currently employed that will be allocated to the contract work including any apprentices and on-the-job trainees currently employed.
 - Table C - Indicate the racial breakdown of the total apprentices and on-the-job trainees shown in Table A.

RETURN WITH BID
Contract No. 60L34
Various Counties
Section 2010-053-I
Various Routes
District 1 Construction Funds

PROPOSAL SIGNATURE SHEET

The undersigned bidder hereby makes and submits this bid on the subject Proposal, thereby assuring the Department that all requirements of the Invitation for Bids and rules of the Department have been met, that there is no misunderstanding of the requirements of paragraph 3 of this Proposal, and that the contract will be executed in accordance with the rules of the Department if an award is made on this bid.

(IF AN INDIVIDUAL) Firm Name _____
Signature of Owner _____
Business Address _____

(IF A CO-PARTNERSHIP) Firm Name _____
By _____
Business Address _____
Name and Address of All Members of the Firm:

(IF A CORPORATION)
(IF A JOINT VENTURE, USE THIS SECTION FOR THE MANAGING PARTY AND THE SECOND PARTY SHOULD SIGN BELOW) Corporate Name _____
By _____
Signature of Authorized Representative _____
Typed or printed name and title of Authorized Representative _____
Attest _____
Signature _____
Business Address _____

(IF A JOINT VENTURE) Corporate Name _____
By _____
Signature of Authorized Representative _____
Typed or printed name and title of Authorized Representative _____
Attest _____
Signature _____
Business Address _____

If more than two parties are in the joint venture, please attach an additional signature sheet.



Illinois Department of Transportation

Return with Bid

**Division of Highways
Proposal Bid Bond
(Effective November 1, 1992)**

Item No. _____

Letting Date _____

KNOW ALL MEN BY THESE PRESENTS, That We _____

as PRINCIPAL, and _____

_____ as SURETY, are held jointly, severally and firmly bound unto the STATE OF ILLINOIS in the penal sum of 5 percent of the total bid price, or for the amount specified in Article 102.09 of the "Standard Specifications for Road and Bridge Construction" in effect on the date of invitation for bids, whichever is the lesser sum, well and truly to be paid unto said STATE OF ILLINOIS, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, that whereas, the PRINCIPAL has submitted a bid proposal to the STATE OF ILLINOIS, acting through the Department of Transportation, for the improvement designated by the Transportation Bulletin Item Number and Letting Date indicated above.

NOW, THEREFORE, if the Department shall accept the bid proposal of the PRINCIPAL; and if the PRINCIPAL shall, within the time and as specified in the bidding and contract documents, submit a DBE Utilization Plan that is accepted and approved by the Department; and if, after award by the Department, the PRINCIPAL shall enter into a contract in accordance with the terms of the bidding and contract documents including evidence of the required insurance coverages and providing such bond as specified with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof; or if, in the event of the failure of the PRINCIPAL to make the required DBE submission or to enter into such contract and to give the specified bond, the PRINCIPAL pays to the Department the difference not to exceed the penalty hereof between the amount specified in the bid proposal and such larger amount for which the Department may contract with another party to perform the work covered by said bid proposal, then this obligation shall be null and void, otherwise, it shall remain in full force and effect.

IN THE EVENT the Department determines the PRINCIPAL has failed to comply with any requirement as set forth in the preceding paragraph, then Surety shall pay the penal sum to the Department within fifteen (15) days of written demand therefor. If Surety does not make full payment within such period of time, the Department may bring an action to collect the amount owed. Surety is liable to the Department for all its expenses, including attorney's fees, incurred in any litigation in which it prevails either in whole or in part.

In TESTIMONY WHEREOF, the said PRINCIPAL and the said SURETY have caused this instrument to be signed by

their respective officers this _____ day of _____ A.D., _____.

PRINCIPAL

SURETY

(Company Name)

(Company Name)

By _____
(Signature & Title)

By: _____
(Signature of Attorney-in-Fact)

Notary Certification for Principal and Surety

STATE OF ILLINOIS,
County of _____

I, _____, a Notary Public in and for said County, do hereby certify that
_____ and _____
(Insert names of individuals signing on behalf of PRINCIPAL & SURETY)

who are each personally known to me to be the same persons whose names are subscribed to the foregoing instrument on behalf of PRINCIPAL and SURETY, appeared before me this day in person and acknowledged respectively, that they signed and delivered said instrument as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and notarial seal this _____ day of _____ A.D. _____

My commission expires _____

Notary Public

In lieu of completing the above section of the Proposal Bid Form, the Principal may file an Electronic Bid Bond. By signing the proposal and marking the check box next to the Signature and Title line below, the Principal is ensuring the identified electronic bid bond has been executed and the Principal and Surety are firmly bound unto the State of Illinois under the conditions of the bid bond as shown above.

Electronic Bid Bond ID# _____ Company / Bidder Name _____ _____
Signature and Title

(1) Policy

It is public policy that disadvantageded businesses as defined in 49 CFR Part 26 and the Special Provision shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal or State funds. Consequently the requirements of 49 CFR Part 26 apply to this contract.

(2) Obligation

The contractor agrees to ensure that disadvantageded businesses as defined in 49 CFR Part 26 and the Special Provision have the maximum opportunity to participate in the performance of contracts or subcontracts financed in whole or in part with Federal or State funds. The contractor shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 and the Special Provision to ensure that said businesses have the maximum opportunity to compete for and perform under this contract. The contractor shall not discriminate on the basis of race, color, national origin or sex in the award and performance of contracts.

(3) Project and Bid Identification

Complete the following information concerning the project and bid:

Route _____	Total Bid _____
Section _____	Contract DBE Goal _____ (Percent) _____ (Dollar Amount)
Project _____	
County _____	
Letting Date _____	
Contract No. _____	
Letting Item No. _____	

(4) Assurance

I, acting in my capacity as an officer of the undersigned bidder (or bidders if a joint venture), hereby assure the Department that on this project my company : (check one)

Meets or exceeds contract award goals and has provided documented participation as follows:
Disadvantaged Business Participation _____ percent

Attached are the signed participation statements, forms SBE 2025, required by the Special Provision evidencing availability and use of each business participating in this plan and assuring that each business will perform a commercially useful function in the work of the contract.

Failed to meet contract award goals and has included good faith effort documentation to meet the goals and that my company has provided participation as follows:
Disadvantaged Business Participation _____ percent

The contract goals should be accordingly modified or waived. Attached is all information required by the Special Provision in support of this request including good faith effort. Also attached are the signed participation statements, forms SBE 2025, required by the Special Provision evidencing availability and use of each business participating in this plan and assuring that each business will perform a commercially useful function in the work of the contract.

Company

By _____

Title _____

Date _____

The "as read" Low Bidder is required to comply with the Special Provision.

Submit only one utilization plan for each project. The utilization plan shall be submitted in accordance with the special provision.

Bureau of Small Business Enterprises **Local Let Projects**
2300 South Dirksen Parkway Submit forms to the
Springfield, Illinois 62764 Local Agency



DBE Participation Statement

Subcontractor Registration _____

Letting _____

Participation Statement

Item No. _____

(1) Instructions

Contract _____

This form must be completed for each disadvantaged business participating in the Utilization Plan. This form shall be submitted in accordance with the special provision and will be attached to the Utilization Plan form.. If additional space is needed complete an additional form for the firm.

(2) Work

Pay Item No.	Description	Quantity	Unit Price	Total
Total				

(3) Partial Payment Items

For any of the above items which are partial pay items, specifically describe the work and subcontract dollar amount:

(4) Commitment

The undersigned certify that the information included herein is true and correct, and that the DBE firm listed below has agreed to perform a commercially useful function in the work of the contract item(s) listed above and to execute a contract with the prime contractor. The undersigned further understand that no changes to this statement may be made without prior approval from the Department's Bureau of Small Business Enterprises and that complete and accurate information regarding actual work performed on this project and the payment therefore must be provided to the Department.

Signature for Prime Contractor

Signature for DBE Firm

Title _____

Title _____

Date _____

Date _____

Contact _____

Contact _____

Phone _____

Phone _____

Firm Name _____

Firm Name _____

Address _____

Address _____

City/State/Zip _____

City/State/Zi _____

E _____

WC _____

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the statutory purpose as outlined under the state and federal law. Disclosure of this information is **REQUIRED**. Failure to provide any information will result in the contract not being awarded. This form has been approved by the State Forms Management Center.

PROPOSAL ENVELOPE



PROPOSALS

for construction work advertised for bids by the
Illinois Department of Transportation

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

Bidders should use an IDOT proposal envelope or affix this form to the front of a 10" x 13" envelope for the submittal of bids. If proposals are mailed, they should be enclosed in a second or outer envelope addressed to:

Engineer of Design and Environment - Room 326
Illinois Department of Transportation
2300 South Dirksen Parkway
Springfield, Illinois 62764

NOTICE

Individual bids, including Bid Bond and/or supplemental information if required, should be securely stapled.

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

None of the following material needs to be returned with the bid package unless the special provisions require documentation and/or other information to be submitted.

**Contract No. 60L34
Various Counties
Section 2010-053-I
Various Routes
District 1 Construction Funds**



Illinois Department of Transportation

SUBCONTRACTOR DOCUMENTATION

Public Acts 96-0795 and 96-0920, enacted substantial changes to the provisions of the Illinois Procurement Code (30 ILCS 500). Among the changes are provisions affecting subcontractors. The Contractor awarded this contract will be required as a material condition of the contract to implement and enforce the contract requirements applicable to subcontractors approved in accordance with article 108.01 of the Standard Specifications for Road and Bridge Construction.

If the Contractor seeks approval of subcontractors to perform a portion of the work, and approval is granted by the Department, the Contractor shall provide a copy of the subcontract to the Chief Procurement Officer within 20 calendar days after execution of the subcontract.

The subcontract shall contain the certifications required to be made by subcontractors pursuant to Article 50 of the Illinois Procurement Code. This Notice to Bidders includes a document incorporating all required subcontractor certifications and disclosures for use by the Contractor in compliance with this mandate. The document is entitled State Required Ethical Standards Governing Subcontractors.

RETURN WITH SUBCONTRACT

STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

Article 50 of the Illinois Procurement Code establishes the duty of all State chief procurement officers, State purchasing officers, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.

The certifications hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed should the Department approve the subcontractor. The chief procurement officer may terminate or void the subcontract approval if it is later determined that the bidder or subcontractor rendered a false or erroneous certification.

Section 50-2 of the Illinois Procurement Code provides that every person that has entered into a multi-year contract and every subcontractor with a multi-year subcontract shall certify, by July 1 of each fiscal year covered by the contract after the initial fiscal year, to the responsible chief procurement officer whether it continues to satisfy the requirements of Article 50 pertaining to the eligibility for a contract award. If a contractor or subcontractor is not able to truthfully certify that it continues to meet all requirements, it shall provide with its certification a detailed explanation of the circumstances leading to the change in certification status. A contractor or subcontractor that makes a false statement material to any given certification required under Article 50 is, in addition to any other penalties or consequences prescribed by law, subject to liability under the Whistleblower Reward and Protection Act for submission of a false claim.

A. Bribery

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

(a) Prohibition. No person or business shall be awarded a contract or subcontract under this Code who:

(1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or

(2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.

(b) Businesses. No business shall be barred from contracting with any unit of State or local government, or subcontracting under such a contract, as a result of a conviction under this Section of any employee or agent of the business if the employee or agent is no longer employed by the business and:

(1) the business has been finally adjudicated not guilty; or

(2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract to which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 1961.

(c) Conduct on behalf of business. For purposes of this Section, when an official, agent, or employee of a business committed the bribery or attempted bribery on behalf of the business and in accordance with the direction or authorization of a responsible official of the business, the business shall be chargeable with the conduct.

(d) Certification. Every bid submitted to and contract executed by the State, and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the contractor or the subcontractor, respectively, that the contractor or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any certifications required by this Section are false. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

2. The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50.5.

B. Felons

1. The Illinois Procurement Code provides:

Section 50-10. Felons. Unless otherwise provided, no person or business convicted of a felony shall do business with the State of Illinois or any State agency, or enter into a subcontract, from the date of conviction until 5 years after the date of completion of the sentence for that felony, unless no person held responsible by a prosecutorial office for the facts upon which the conviction was based continues to have any involvement with the business.

2. Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer may declare the related contract void if any of the certifications required by this Section are false.

RETURN WITH SUBCONTRACT

C. Debt Delinquency

1. The Illinois Procurement Code provides:

Section 50-11 and 50-12. Debt Delinquency.

The contractor or bidder or subcontractor, respectively, certifies that it, or any affiliate, is not barred from being awarded a contract or subcontract under the Procurement Code. Section 50-11 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it knows or should know that it, or any affiliate, is delinquent in the payment of any debt to the State as defined by the Debt Collection Board. Section 50-12 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it, or any affiliate, has failed to collect and remit Illinois Use Tax on all sales of tangible personal property into the State of Illinois in accordance with the provisions of the Illinois Use Tax Act. The bidder or contractor or subcontractor, respectively, further acknowledges that the chief procurement officer may declare the related contract void if this certification is false or if the bidder, contractor, or subcontractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

D. Prohibited Bidders, Contractors and Subcontractors

1. The Illinois Procurement Code provides:

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction.. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Procurement Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the chief procurement officer shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-12 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Procurement Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the chief procurement officer may declare the contract void if this certification is false.

The undersigned, on behalf of the subcontracting company, has read and understands the above certifications and makes the certifications as required by law.

Name of Subcontracting Company

Authorized Officer

Date

RETURN WITH SUBCONTRACT

SUBCONTRACTOR DISCLOSURES

I. DISCLOSURES

- A. The disclosures hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed. The subcontractor further certifies that the Department has received the disclosure forms for each subcontract.

The chief procurement officer may void the bid, contract, or subcontract, respectively, if it is later determined that the bidder or subcontractor rendered a false or erroneous disclosure. A contractor or subcontractor may be suspended or debarred for violations of the Procurement Code. Furthermore, the chief procurement officer may void the contract or subcontract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all subcontracts with a total value of \$25,000 or more from subcontractors identified in Section 20-120 of the Illinois Procurement Code, shall be accompanied by disclosure of the financial interests of the subcontractor. This disclosed information for the subcontractor, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the Prime Contractor's contract. Furthermore, pursuant to this Section, the Procurement Policy Board may recommend to allow or void a contract or subcontract based on a potential conflict of interest.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the subcontracting entity or its parent entity, whichever is less, unless the subcontractor is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 400 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each person making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each person making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.

The current annual salary of the Governor is \$177,412.00.

In addition, all disclosures shall indicate any other current or pending contracts, subcontracts, proposals, leases, or other ongoing procurement relationships the subcontracting entity has with any other unit of state government and shall clearly identify the unit and the contract, subcontract, proposal, lease, or other relationship.

2. Disclosure Forms. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. Subject individuals should be covered each by one form. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies.

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the subcontractor is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 400 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any person or entity holding any ownership share that is in excess of 5%. If a subcontractor is not subject to Federal 10K reporting, the subcontractor must determine if any individuals are required by law to complete a financial disclosure form. To do this, the subcontractor should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on the second page of Form A must be signed and dated by a person that is authorized to execute contracts for the subcontracting company. Note: These questions are for assistance only and are not required to be completed.

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES ___ NO ___
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than 60% of the annual salary of the Governor? YES ___ NO ___
3. Does anyone in your organization receive more than 60% of the annual salary of the Governor of the subcontracting entity's or parent entity's distributive income? YES ___ NO ___.

(Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.)

4. Does anyone in your organization receive greater than 5% of the subcontracting entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES ___ NO ___

(Note: Only one set of forms needs to be completed per person per subcontract even if a specific individual would require a yes answer to more than one question.)

A "YES" answer to any of these questions requires the completion of Form A. The subcontractor must determine each individual in the subcontracting entity or the subcontracting entity's parent company that would cause the questions to be answered "Yes". Each form must be signed and dated by a person that is authorized to execute contracts for your organization. **Photocopied or stamped signatures are not acceptable.** The person signing can be, but does not have to be, the person for which the form is being completed. The subcontractor is responsible for the accuracy of any information provided.

If the answer to each of the above questions is "NO", then the NOT APPLICABLE STATEMENT on page 2 of Form A must be signed and dated by a person that is authorized to execute contracts for your company.

RETURN WITH SUBCONTRACT

Form B: Instructions for Identifying Other Contracts & Procurement Related Information

Disclosure Form B must be completed for each subcontract submitted by the subcontracting entity. *Note: Checking the NOT APPLICABLE STATEMENT on Form A does not allow the subcontractor to ignore Form B. Form B must be completed, checked, and dated or the subcontract will not be approved.*

The Subcontractor shall identify, by checking Yes or No on Form B, whether it has any pending contracts, subcontracts, leases, bids, proposals, or other ongoing procurement relationship with any other (non-IDOT) State of Illinois agency. If "No" is checked, the subcontractor only needs to complete the check box on the bottom of Form B. If "Yes" is checked, the subcontractor must list all non-IDOT State of Illinois agency pending contracts, subcontracts, leases, bids, proposals, and other ongoing procurement relationships. These items may be listed on Form B or on an attached sheet(s). Contracts with cities, counties, villages, etc. are not considered State of Illinois agency contracts and are not to be included. Contracts or subcontracts with other State of Illinois agencies such as the Department of Natural Resources or the Capital Development Board must be included.

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A Subcontractor: Financial Information & Potential Conflicts of Interest Disclosure

Subcontractor Name, Legal Address, City, State, Zip, Telephone Number, Email Address, Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Subcontractors desiring to enter into a subcontract of a State of Illinois contract must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form.

The current annual salary of the Governor is \$177,412.00.

DISCLOSURE OF FINANCIAL INFORMATION

1. Disclosure of Financial Information. The individual named below has an interest in the SUBCONTRACTOR (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than 60% of the annual salary of the Governor.

FOR INDIVIDUAL (type or print information) NAME: ADDRESS Type of ownership/distributable income share: stock sole proprietorship Partnership other: (explain on separate sheet): % or \$ value of ownership/distributable income share:

2. Disclosure of Potential Conflicts of Interest. Check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If the answer to any question is "Yes", please attach additional pages and describe.

(a) State employment, currently or in the previous 3 years, including contractual employment of services. Yes ___ No ___

If your answer is yes, please answer each of the following questions.

- 1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___ No ___
2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, provide the name the State agency for which you are employed and your annual salary.

RETURN WITH SUBCONTRACT

3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor?
Yes ___ No ___

4. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of two times the salary of the Governor?
Yes ___ No ___

(b) State employment of spouse, father, mother, son, or daughter, including contractual employment services in the previous 2 years.

Yes ___ No ___

If your answer is yes, please answer each of the following questions.

1. Is your spouse or any minor children currently an officer or employee of the Capitol Development Board or the Illinois Toll Highway Authority?
Yes ___ No ___

2. Is your spouse or any minor children currently appointed to or employed by any agency of the State of Illinois? If your spouse or minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, provide the name of your spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. _____

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, as of 7/1/07) are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 100% of the annual salary of the Governor?
Yes ___ No ___

4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of two times the annual salary of the Governor?
Yes ___ No ___

(c) Elective status; the holding of elective office of the State of Illinois, the government of the United States, any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois currently or in the previous 3 years.
Yes ___ No ___

(d) Relationship to anyone holding elective office currently or in the previous 2 years; spouse, father, mother, son, or daughter.
Yes ___ No ___

(e) Appointive office; the holding of any appointive government office of the State of Illinois, the United States of America, or any unit of local government authorized by the Constitution of the State of Illinois or the statutes of the State of Illinois, which office entitles the holder to compensation in excess of the expenses incurred in the discharge of that office currently or in the previous 3 years.
Yes ___ No ___

(f) Relationship to anyone holding appointive office currently or in the previous 2 years; spouse, father, mother, son, or daughter.
Yes ___ No ___

(g) Employment, currently or in the previous 3 years, as or by any registered lobbyist of the State government.
Yes ___ No ___

RETURN WITH SUBCONTRACT

(h) Relationship to anyone who is or was a registered lobbyist in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___ No ___

(i) Compensated employment, currently or in the previous 3 years, by any registered election or reelection committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections. Yes ___ No ___

(j) Relationship to anyone; spouse, father, mother, son, or daughter; who was a compensated employee in the last 2 years by any registered election or re-election committee registered with the Secretary of State or any county clerk of the State of Illinois, or any political action committee registered with either the Secretary of State or the Federal Board of Elections. Yes ___ No ___

3. Communication Disclosure.

Disclose the name and address of each lobbyist and other agent of the bidder or offeror who is not identified in Section 2 of this form, who is has communicated, is communicating, or may communicate with any State officer or employee concerning the bid or offer. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the process and throughout the term of the contract. If no person is identified, enter "None" on the line below:

Name and address of person(s): _____

RETURN WITH SUBCONTRACT

4. Debarment Disclosure. For each of the persons identified under Sections 2 and 3 of this form, disclose whether any of the following has occurred within the previous 10 years: debarment from contracting with any governmental entity; professional licensure discipline; bankruptcies; adverse civil judgments and administrative findings; and criminal felony convictions. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the procurement process and term of the contract. If no person is identified, enter "None" on the line below:

Name of person(s): _____

Nature of disclosure: _____

APPLICABLE STATEMENT

This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page. Under penalty of perjury, I certify the contents of this disclosure to be true and accurate to the best of my knowledge.

Completed by: _____ Date _____
Signature of Individual or Authorized Officer

NOT APPLICABLE STATEMENT

Under penalty of perjury, I have determined that no individuals associated with this organization meet the criteria that would require the completion of this Form A.

This Disclosure Form A is submitted on behalf of the SUBCONTRACTOR listed on the previous page.

_____ Date _____
Signature of Authorized Officer

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT
OF TRANSPORTATION

Form B
Subcontractor: Other Contracts &
Procurement Related Information
Disclosure

Subcontractor Name		
Legal Address		
City, State, Zip		
Telephone Number	Email Address	Fax Number (if available)

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for subcontracts with a total value of \$25,000 or more, from subcontractors identified in Section 20-120 of the Illinois Procurement Code, and for all open-ended contracts.

DISCLOSURE OF OTHER CONTRACTS, SUBCONTRACTS, AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The SUBCONTRACTOR shall identify whether it has any pending contracts, subcontracts, including leases, bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No ___

If "No" is checked, the subcontractor only needs to complete the signature box on the bottom of this page.

2. If "Yes" is checked. Identify each such relationship by showing State of Illinois agency name and other descriptive information such as bid or project number (attach additional pages as necessary). SEE DISCLOSURE FORM INSTRUCTIONS:

THE FOLLOWING STATEMENT MUST BE CHECKED

<input type="checkbox"/>	_____	_____
	Signature of Authorized Officer	Date



NOTICE TO BIDDERS

1. TIME AND PLACE OF OPENING BIDS. Sealed proposals for the improvement described herein will be received by the Department of Transportation at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 o'clock a.m., September 17, 2010. All bids will be gathered, sorted, publicly opened and read in the auditorium at the Department of Transportation's Harry R. Hanley Building shortly after the 10:00 a.m. cut off time.

2. DESCRIPTION OF WORK. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

**Contract No. 60L34
Various Counties
Section 2010-053-I
Various Routes
District 1 Construction Funds**

Annual maintenance of traffic signals, highway lighting, advanced systems, pump stations, surveillance and other electrical systems in District One.

3. INSTRUCTIONS TO BIDDERS. (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 101.09 of the Standard Specifications for Road and Bridge Construction, become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.

(b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.

4. AWARD CRITERIA AND REJECTION OF BIDS. This contract will be awarded to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to readvertise the proposed improvement, and to waive technicalities.

By Order of the
Illinois Department of Transportation

Gary Hannig,
Secretary

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2010

This index contains a listing of SUPPLEMENTAL SPECIFICATIONS and frequently used RECURRING SPECIAL PROVISIONS.

ERRATA Standard Specifications for Road and Bridge Construction (Adopted 1-1-07) (Revised 1-1-10)

SUPPLEMENTAL SPECIFICATIONS

<u>Std. Spec. Sec.</u>		<u>Page No.</u>
201	Clearing, Tree Removal and Protection	1
205	Embankment	2
251	Mulch	3
253	Planting Woody Plants	4
280	Temporary Erosion Control	6
406	Hot-Mix Asphalt Binder and Surface Course	7
443	Reflective Crack Control Treatment	12
502	Excavation for Structures	15
503	Concrete Structures	16
504	Precast Concrete Structures	17
505	Steel Structures	18
540	Box Culverts	19
581	Waterproofing Membrane System	20
630	Steel Plate Beam Guardrail	21
633	Removing and Reerecting Guardrail and Terminals	22
637	Concrete Barrier	23
669	Removal and Disposal of Regulated Substances	24
672	Sealing Abandoned Water Wells	25
701	Work Zone Traffic Control and Protection	26
720	Sign Panels and Appurtenances	27
721	Sign Panel Overlay	28
722	Demountable Sign Legend Characters and Arrows	29
726	Mile Post Marker Assembly	30
733	Overhead Sign Structures	31
783	Pavement Marking and Marker Removal	32
801	Electrical Requirements	33
805	Electrical Service Installation – Traffic Signals	34
836	Pole Foundation	35
838	Breakaway Devices	36
862	Uninterruptable Power Supply	37
873	Electric Cable	39
878	Traffic Signal Concrete Foundation	41
1003	Fine Aggregates	42
1004	Coarse Aggregates	43
1005	Stone and Broken Concrete	44
1006	Metals	45
1008	Structural Steel Coatings	47
1010	Finely Divided Materials	48
1020	Portland Cement Concrete	49
1022	Concrete Curing Materials	58
1024	Nonshrink Grout	59
1030	Hot-Mix Asphalt	60
1032	Bituminous Materials	65

1042	Precast Concrete Products	68
1062	Reflective Crack Control System	70
1069	Pole and Tower	72
1074	Control Equipment	75
1076	Wire and Cable	80
1080	Fabric Materials	81
1081	Materials for Planting	82
1083	Elastomeric Bearings	84
1090	Sign Base	85
1091	Sign Face	87
1092	Sign Legend and Supplemental Panels	95
1093	Sign Supports	96
1094	Overhead Sign Structures	98
1095	Pavement Markings	104
1101	General Equipment	106
1102	Hot-Mix Asphalt Equipment	107
1103	Portland Cement Concrete Equipment	109
1106	Work Zone Traffic Control Devices	110

RECURRING SPECIAL PROVISIONS

The following RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

<u>CHECK SHEET #</u>	<u>PAGE NO.</u>
1 Additional State Requirements For Federal-Aid Construction Contracts (Eff. 2-1-69) (Rev. 1-1-10)	111
2 Subletting of Contracts (Federal-Aid Contracts) (Eff. 1-1-88) (Rev. 5-1-93)	114
3 X EEO (Eff. 7-21-78) (Rev. 11-18-80)	115
4 X Specific Equal Employment Opportunity Responsibilities Non Federal-Aid Contracts (Eff. 3-20-69) (Rev. 1-1-94)	125
5 X Required Provisions - State Contracts (Eff. 4-1-65) (Rev. 1-1-10)	130
6 Reserved	135
7 Reserved	136
8 Haul Road Stream Crossings, Other Temporary Stream Crossings, and In-Stream Work Pads (Eff. 1-2-92) (Rev. 1-1-98)	137
9 Construction Layout Stakes Except for Bridges (Eff. 1-1-99) (Rev. 1-1-07)	138
10 Construction Layout Stakes (Eff. 5-1-93) (Rev. 1-1-07)	141
11 Use of Geotextile Fabric for Railroad Crossing (Eff. 1-1-95) (Rev. 1-1-07)	144
12 Subsealing of Concrete Pavements (Eff. 11-1-84) (Rev. 1-1-07)	146
13 Hot-Mix Asphalt Surface Correction (Eff. 11-1-87) (Rev. 1-1-09)	150
14 Pavement and Shoulder Resurfacing (Eff. 2-1-00) (Rev. 1-1-09)	152
15 PCC Partial Depth Hot-Mix Asphalt Patching (Eff. 1-1-98) (Rev. 1-1-07)	153
16 Patching with Hot-Mix Asphalt Overlay Removal (Eff. 10-1-95) (Rev. 1-1-07)	155
17 Polymer Concrete (Eff. 8-1-95) (Rev. 1-1-08)	156
18 PVC Pipeliner (Eff. 4-1-04) (Rev. 1-1-07)	158
19 Pipe Underdrains (Eff. 9-9-87) (Rev. 1-1-07)	159
20 Guardrail and Barrier Wall Delineation (Eff. 12-15-93) (Rev. 1-1-97)	160
21 Bicycle Racks (Eff. 4-1-94) (Rev. 1-1-07)	164
22 Temporary Modular Glare Screen System (Eff. 1-1-00) (Rev. 1-1-07)	166
23 Temporary Portable Bridge Traffic Signals (Eff. 8-1-03) (Rev. 1-1-07)	168
24 Work Zone Public Information Signs (Eff. 9-1-02) (Rev. 1-1-07)	170
25 Night Time Inspection of Roadway Lighting (Eff. 5-1-96)	171
26 English Substitution of Metric Bolts (Eff. 7-1-96)	172
27 English Substitution of Metric Reinforcement Bars (Eff. 4-1-96) (Rev. 1-1-03)	173
28 Calcium Chloride Accelerator for Portland Cement Concrete (Eff. 1-1-01)	174
29 Reserved	175
30 Quality Control of Concrete Mixtures at the Plant (Eff. 8-1-00) (Rev. 1-1-09)	176
31 Quality Control/Quality Assurance of Concrete Mixtures (Eff. 4-1-92) (Rev. 1-1-09)	184
32 Asbestos Bearing Pad Removal (Eff. 11-1-03)	196
33 Asbestos Hot-Mix Asphalt Surface Removal (Eff. 6-1-89) (Rev. 1-1-09)	197

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DISTRICT 1 ELECTRICAL MAINTENANCE CONTRACT
60L34
FOR YEARS 2011-2012

SPECIAL PROVISIONS:

SCHEDULE OF PRICES – PAGES 2 THROUGH 21

SECTION 1 GENERAL CONTRACT REQUIREMENTS

ARTICLE 1.0	BIDDERS INFORMATION AND SPECIAL PRE-QUALIFICATION SUBMITTALS
ARTICLE 2.0	DESCRIPTION OF WORK
ARTICLE 3.0	GENERAL CONTRACT REQUIREMENTS
ARTICLE 4.0	ROUTINE MAINTENANCE WORK AND PAYMENT
ARTICLE 5.0	NON-ROUTINE MAINTENANCE WORK AND PAYMENT
ARTICLE 6.0	ADVANCED SYSTEMS
ARTICLE 7.0	LIGHTING, NAVIGATION AND SIGN ILLUMINATION SYSTEM
ARTICLE 8.0	PUMP STATION SYSTEM
ARTICLE 9.0	SURVEILLANCE AND DYNAMIC MESSAGE SIGN SYSTEMS
ARTICLE 10.0	TRAFFIC SIGNAL SYSTEM
ARTICLE 11.0	EXTRA SYSTEMS
ARTICLE 12.0	DEFINITIONS, SPECIFICATIONS, & STANDARDS
ARTICLE 13.0	TABLES AND CHARTS

SECTION 2	SYSTEM SPECIFICATIONS
	ADVANCED SYSTEM
	GENERAL SYSTEM
	LIGHTING, NAVIGATION AND SIGN ILLUMINATION SYSTEM
	PUMP STATION SYSTEM
	SURVEILLANCE AND DYNAMIC MESSAGE SIGN SYSTEM
	TRAFFIC SIGNAL SYSTEM
	EXTRA SYSTEMS

SECTION 3 LIST OF LOCATIONS

SECTION 4 BDE SPECIAL PROVISIONS

STATE OF ILLINOIS
SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction," adopted , the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways," and the "Manual of Test Procedures for Materials" in effect on the date of invitation for bids, and the Supplemental Specifications and Recurring Special Provisions indicated on the Check Sheet included herein which apply to and govern the construction of Various Routes, Section 2010-053-I, in Various Counties, Contract 60L34 and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

CONTRACT NO. 60L34
VARIOUS COUNTIES
SECTION 2010-053-I
VARIOUS ROUTES
DISTRICT 1 FORMAL CONTRACTS

Annual maintenance of traffic signals, highway lighting, advanced system and other electrical systems located in District One; includes 1,500 ft aerial cable; 1,000 sq ft remove and replace asphalt; 15,000 ft galvanized steel conduit; 6,000 ft electrical cable assembly; 59,000 ft electrical cable; 5,000 ft fiber cable; 46 handholes; 15 inspections of standby generators; 5,000ft trench and backfill; 7,000 ft of unit duct; 100 breakaway devices; 8 lighting controllers; 100ft light pole foundation; 50 metal light pole foundations; 200 light pole kits; 4 distribution panels; 4 SCADA, lighting, radio control equipment; 6 light towers; 3000 ft light tower clean and paint; 350 fluorescent luminaires; wash walls at Hubbard's Cave, 25 pump rebuilds; 6 pump SCADA equipment; 256 pump vibration testing and analysis; 800 sq yds wet pit cleaning; 200 hrs wet pit power wash; 8,000 ft detector loop; 12 steel mast arm assemblies and poles; 45 signal heads; 300 LED signal heads; 5 video detection systems; 4 wireless interconnect systems; traffic control and protection. 20 cctv dome cameras; 10 Chevron signs; 20 swing gates; communication hut

SCHEDULE OF PRICES

ROUTINE MAINTENANCE FOR 9 MONTHS				
Item	Item Description	Total Locations	Units per Location	ELU**
A-1	Kennedy REVLAC, RACS, & HS Ramp Gates	311	0.75	233.25
A-2	Traffic Monitoring Cameras	148	0.5	74
A-3a	Building, Hut, Base Station & Tower Equipment	13	4.0	52

Total Equivalent Location Units (ELUs): 359.25

Note: If this Contract is renewed for year 2012 Pay Items A-1, A-2 and A-3a above will be paid at the bid price per ELU times Total ELU for monthly routine maintenance. (Routine Maintenance for 12 months).

ROUTINE MAINTENANCE FOR 12 MONTHS				
Item	Item Description	Total Locations	Units per Location	ELU**
A-3b	Building, Hut, Base Station & Tower Equipment	7	2.00	14.00
L-1	Lighting System - On-Expressway	242	3.00	726.00
L-2	Lighting System - Off-Expressway	172	1.50	258.00
L-3	Lighting System - Other Luminaires	87	0.25	21.75
P-1	Pump Stations > or = 4 Pumps	27	6.00	162.00
P-2	Pump Stations < 4 Pumps	21	4.00	84.00
S-1	Surveillance System - Ramp Controls	99	1.00	99.00
S-2	Surveillance System – Cabinets	592	0.25	148.00
S-3	Surveillance System - Expressway DMS	27	2.00	54.00
S-4	Surveillance System - Arterial DMS	14	1.00	14.00
T-1	Traffic Signal System – Signals	2384	1.00	2384.00
T-2	Traffic Signal System - Flashing Beacons	282	0.25	70.50
X-1	Extra Systems	69	0.50	34.50

Total Equivalent Location Units (ELUs): 4069.75

Bid Price per ELU per Month:	\$
Monthly Cost of A-1, A-2, & A-3a Routine Maintenance: (Bid Price per ELU) x (Total A-1, A-2, & A-3a ELUs):	\$
Monthly Cost of A-3b, L, P, S, T, and X Routine Maintenance: (Bid Price per ELU) x (Total A-3b, L, P, S, T, and X ELUs):	\$
Routine Maintenance Cost for A-1, A-2, & A-3a/9months (Monthly Cost x 9):	\$
Routine Maintenance Cost for A-3b, L, P, S, T and X/Yr (Monthly Cost x 12):	\$
TOTAL ROUTINE MAINTENANCE COST:	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
ACC1	CCTV Dome Camera Assembly, Color, PTZ Control, Furnish Only	Ea	20	\$	\$
ACM1	CCTV Color Monitor, Quad, 4", Furnish Only	Ea	5	\$	\$
ACM2	CCTV Color Monitor, 8.4", Furnish Only	Ea	5	\$	\$
ACM3	CCTV Color Monitor, Dual, 8.4", Furnish Only	Ea	5	\$	\$
ACM4	CCTV Color Monitor, 12", Furnish Only	Ea	2	\$	\$
ACP1	CCTV Camera Pole, Furnish Only	Ea	12	\$	\$
ACP2	CCTV Camera Lowering System, Furnish and Install	Ea	6	\$	\$
ALD1	LED Chevron Sign, Furnish Only	Ea	10	\$	\$
ALD2	LED Auxiliary Sign, Furnish Only	Ea	3	\$	\$
ALD3	LED Lane Usage Sign, Furnish Only	Ea	3	\$	\$
ALD4	LED Gore Sign, Furnish Only	Ea	3	\$	\$
ARR1	Restraining Barrier Tape Cartridge, Refurbish	Ea	2	\$	\$
ARR2	Restraining Barrier Dragnet Assembly, Furnish Only	Ea	2	\$	\$
ASC1	Swing Gate Controller, Furnish Only	Ea	1	\$	\$
ASD1	Swing Gate Drivetrain Assembly, Furnish Only	Ea	1	\$	\$
ASG1	Swing Gate Arm, 2' to 4', Furnish Only	Ea	2	\$	\$
ASG2	Swing Gate Arm, 5' to 8', Furnish Only	Ea	4	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
ASG3	Swing Gate Arm, 9' to 12', Furnish Only	Ea	4	\$	\$
ASG4	Swing Gate Arm, 13' to 16', Furnish Only	Ea	4	\$	\$
ASG5	Swing Gate Arm, 17' to 20', Furnish Only	Ea	4	\$	\$
ASG6	Swing Gate Arm, 21' to 23', Furnish Only	Ea	4	\$	\$
ASG7	Swing Gate Arm Capstan and Bracket Assembly, Furnish Only	Ea	2	\$	\$
AV01	Video Communication Hut, Furnish and Install	Ea	1	\$	\$
AXB1	Budgetary Allowance For Replacement PLC Repair	LS	1	\$ 70,000.00	\$ 70,000.00
AXB2	Budgetary Allowance For Communication Sys. Repair	LS	1	\$ 80,000.00	\$ 80,000.00
AXB3	Budgetary Allowance For Building & Equip. Repair	LS	1	\$ 60,000.00	\$ 60,000.00
AXB4	Budgetary Allowance For Ramp Gates	LS	1	\$ 70,000.00	\$ 70,000.00
GAC1	Aerial Cable, with Messenger Wire, 4-1/C up to No. 2	Ft	1,500	\$	\$
GAS1	Asphalt, Remove and Replace	SF	1,000	\$	\$
GC01	Conduit, Galvanized Steel, Attached to Struct. 3/4 to 1 1/4"	Ft	10,000	\$	\$
GC02	Conduit, Galvanized Steel, Attached to Struct. 1 1/2" to 2 1/2"	Ft	5,000	\$	\$
GC03	Conduit, Galvanized Steel, Attached to Struct. 3" to 5"	Ft	300	\$	\$
GC04	Conduit, Galv. Steel, Attached to Struct. PVC Coated, 3/4 to 1 1/4"	Ft	3,000	\$	\$
GC05	Conduit, Galv. Steel, Attached to Struct. PVC Coated, 1 1/2" to 2 1/2"	Ft	1,000	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
GC06	Conduit, Galv. Steel, Attached to Struct. PVC Coated, 3" to 5"	Ft	300	\$	\$
GC07	Conduit, Galvanized Steel, Encased in Concrete, 3/4" to 2 1/2"	Ft	500	\$	\$
GC08	Conduit, Galvanized Steel, Encased in Concrete, 3" to 5"	Ft	500	\$	\$
GC09	Conduit, Galvanized Steel, in Ground, 3/4 to 2 1/2"	Ft	3,000	\$	\$
GC10	Conduit, Galvanized Steel, In Ground, 3" to 5"	Ft	1,000	\$	\$
GC11	Conduit, Non-Metallic, Coilable, in Ground, 1 1/4"	Ft	1,000	\$	\$
GC12	Conduit, Non-Metallic, Coilable, in Ground, 2"	Ft	1,000	\$	\$
GC13	Conduit, PVC, for Buildings, 1", Schedule 40	Ft	300	\$	\$
GC14	Conduit, Removal	Ft	1,000	\$	\$
GCC1	Controller, Calcium Chloride Pump	Ea	5	\$	\$
GCX1	Coaxial Cable	Ft	500	\$	\$
GE01	Electric Cable Assembly, EPR, 3/C No. 2, 1/C No. 6 Green	Ft	3,000	\$	\$
GE02	Electric Cable Assembly, EPR, 3/C No. 4, 1/C No. 6 Green	Ft	3,000	\$	\$
GE03	Electric Cable, EPR, 1/C up to No. 6	Ft	16,500	\$	\$
GE04	Electric Cable, EPR, 1/C from No. 4 to No. 1	Ft	5,000	\$	\$
GE05	Electric Cable, EPR, 1/C from No. 1/0 to No. 2/0	Ft	3,000	\$	\$
GE06	Electric Cable, EPR, 1/C from No. 3/0 to No. 4/0	Ft	2,000	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
GE07	Electric Cable, EPR, 1/C from 250 MCM to 500 MCM	Ft	1500	\$	\$
GE08	Electric Cable, Pull or Remove	Ft	30,000	\$	\$
GE09	Electric Cable, THWN, 1/C from No.14 to No.10	Ft	30,000	\$	\$
GE10	Electric Service Disconnect, 2 or 3 Wire, Combination	Ea	10	\$	\$
GE11	Electric Service Disconnect, 2 or 3 Wire, Surveillance/Traffic	Ea	5	\$	\$
GE12	Electric Service, Pedestal or Pole Mounted, Complete	Ea	5	\$	\$
GE13	Electric Service, Relocate	Ea	3	\$	\$
GF01	Fiber Optic Trunk/Distribution/Lateral Cable up to 96 SM	Ft	5,000	\$	\$
GF02	Fiber Optic Lateral Installation SM	Ft	5,000	\$	\$
GF03	Fiber Optic Cable, Hybrid 12 MM & 12 SM	Ft	5,000	\$	\$
GF04	Fiber Optic Termination Panel 12F or 24 F	Ea	5	\$	\$
GF05	Fiber Optic Patch Panel, 96 SM	Ea	5	\$	\$
GF06	Fiber Optic Splice Enclosure	Ea	5	\$	\$
GF07	Fiber Optic Innerduct, up to 1 1/2"	Ft	5,000	\$	\$
GF08	Fiber Optic Cable, Install Only	Ft	5,000	\$	\$
GFC1	Foundation, Concrete, Type 1	Ft	20	\$	\$
GFR1	Foundation Removal	Ea	35	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
GGR1	Ground Rod	Ea	40	\$	\$
GH01	Handhole	Ea	30	\$	\$
GH02	Handhole, Fiber Optic	Ea	4	\$	\$
GH03	Handhole, Heavy-Duty	Ea	4	\$	\$
GH04	Handhole, Heavy-Duty, Double	Ea	4	\$	\$
GH05	Handhole, Heavy-Duty, Special	Ea	4	\$	\$
GH06	Handhole, Remove	Ea	20	\$	\$
GH07	Handhole, Re-build	Ea	20	\$	\$
GH08	Handhole, Re-build Existing to Heavy-Duty Type	Ea	10	\$	\$
GIG1	Inspection, Standby Generator	Ea	15	\$	\$
GIT1	Inspection, Thermo Graphic	Ea	2	\$	\$
GJ01	Junction Box, and all Appurtenances, Remove	Ea	10	\$	\$
GJ02	Junction Box, Inline Connectors and Termination	Ea	5	\$	\$
GJ03	Junction Box, Stainless Steel, up to 6" Depth	Ea	45	\$	\$
GJ04	Junction Box, Stainless Steel, 8" Depth	Ea	15	\$	\$
GMR1	Median, Remove and Replace	SF	20	\$	\$
GPC1	Pump, Calcium Chloride	Ea	5	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
GPV1	Pavement Sealcoating	SY	1,000	\$	\$
GRB1	Radio Tower Beacon, Relamp	Ea	10	\$	\$
GRT1	Radio Tower, Inspection and Report	Ea	6	\$	\$
GSD1	Sidewalk, Remove and Replace	SF	500	\$	\$
GSO1	Sodding	SF	500	\$	\$
GTC1	Traffic Control	Ea	25	\$	\$
GTR1	Trench & Backfill with Warning Tape	Ft	5,000	\$	\$
GU01	Uniduct, EPR, 3/c No. 6 & 1/c No. 8 Green, 1"	Ft	3,000	\$	\$
GU02	Uniduct, EPR, 3/c No. 4 & 1/c No. 6 Green, 1 1/4"	Ft	3,000	\$	\$
GU03	Uniduct, EPR, 3/c No. 2 & 1/c No. 6 Green, 1 1/2"	Ft	1,000	\$	\$
GU04	Uniduct, Install Only	Ft	1,000	\$	\$
GV01*	Vendor Budgetary Allowance, EMCMS	Ea	1	\$ 75,000.00	\$ 75,000.00
GV02*	Vendor Budgetary Allowance, Operational Support	Ea	1	\$ 75,000.00	\$ 75,000.00
GWR1	Welding Receptacle and Plug, 3 Pole, 30 Amp, Furnish and Install	Ea	5	\$	\$
GWR2	Welding Receptacle and Plug, 3 Pole, 60 Amp, Furnish and Install	Ea	2	\$	\$
LA01	Arm or Twin Arm with Luminaire, Install Only	Ea	150	\$	\$
LB01	Breakaway Device, T-Base	Ea	100	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
LBB1	Breaker, Branch, 20A to 70A	Ea	10	\$	\$
LBB2	Breaker, Main, 60A to 100A	Ea	5	\$	\$
LBB3	Breaker, Main, 125A to 175A	Ea	5	\$	\$
LBT1	Buck Boost Transformer	Ea	5	\$	\$
LC01	Controller, Duplex Console, with Radio	Ea	4	\$	\$
LC02	Controller, Duplex Console, Without Radio	Ea	4	\$	\$
LC03	Controller, Lighting, Install only	Ea	8	\$	\$
LC04	Controller, Lighting, Remove & Salvage	Ea	8	\$	\$
LC05	Controller, Single Door Console, without Radio	Ea	4	\$	\$
LC06	Controller, Combination Lighting	Ea	2	\$	\$
LCL1	Clock, Digital Astronomical	Ea	10	\$	\$
LCN1	Contactor, 125A to 225A	Ea	2	\$	\$
LCN2	Contactor, 30A to 100A	Ea	5	\$	\$
LD01	Decal Set, Lighting Unit, Pole	Ea	100	\$	\$
LD02	Decal Set, Lighting Unit, Tower	Ea	100	\$	\$
LD03	Decal Set, Lighting Unit, Tunnel or Underpass with Bracket	Ea	100	\$	\$
LD04	Decal Set, Lighting Unit, Tower with Camera	Ea	20	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
LDS1	Disconnect Switch	Ea	5	\$	\$
LE01	Electrical Outlet, GFCI Type	Ea	10	\$	\$
LE02	Convenience Receptacle, 20 Amp	Ea	20	\$	\$
LF01	Foundation, Light Pole	L. Ft.	100	\$	\$
LF02	Foundation, Light Pole, Metal	Ea	50	\$	\$
LF03	Foundation, Light Tower, up to 54" Diameter	L. Ft.	100	\$	\$
LF04	Foundation, Lighting Controller	Ea	5	\$	\$
LF05	Foundation, Modification for Concrete or Metal	Ea	5	\$	\$
LGF1	Ground Field	Ea	10	\$	\$
LP01	Light Pole, Kit	Ea	200	\$	\$
LP02	Light Pole Unit, Install only	Ea	100	\$	\$
LP03	Light Pole Unit, Removal & Salvage	Ea	50	\$	\$
LP04	Wood Pole, Install only	Ea	8	\$	\$
LP05	Wood Pole, Removal & Salvage	Ea	50	\$	\$
LPN1	Panel, Distribution	Ea	10	\$	\$
LS01	SCADA, Lighting, Radio Control Equipment	Ea	4	\$	\$
LS02	SCADA, Lighting, Radio Inspection	Ea	12	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
LS03	SCADA, Lighting, RTU Terminal Configuration	Ea	4	\$	\$
LT01	Light Tower, 110' or less	Ea	3	\$	\$
LT02	Light Tower, 111' or more	Ea	3	\$	\$
LT03	Light Tower, in Place, Clean and Paint	Ft	3,000	\$	\$
LT04	Light Tower, Remove and Re-Erect	Ea	3	\$	\$
LT05	Light Tower, Install only	Ea	3	\$	\$
LT06	Light Tower, Lowering Device for Retrofit	Ea	6	\$	\$
LT07	Cable, Combination CCTV & Lighting, Install	Ea	5	\$	\$
LU01	Luminaire, Fluorescent, Eight (8) Ft.	Ea	100	\$	\$
LU02	Luminaire, Fluorescent, Four (4) Ft.	Ea	100	\$	\$
LU03	Luminaire, Fluorescent, High Bay	Ea	100	\$	\$
LU04	Luminaire, Fluorescent, for Wet Locations	Ea	15	\$	\$
LU05	Luminaire, HPS, for Building Roof	Ea	4	\$	\$
LU06	Luminaire, HPS, for Building Wall	Ea	16	\$	\$
LU07	Luminaire, Keeper	Ea	50	\$	\$
LU08	Luminaire, Navigation LED	Ea	5	\$	\$
LU09	Luminaire, Removal & Salvage	Ea	105	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
LU10	Luminaire Shield, Pole	Ea	50	\$	\$
LU11	Luminaire Shield, Tower	Ea	40	\$	\$
LU12	Luminaire, Tower, Install only	Ea	45	\$	\$
LU13	Luminaire, Two Lamp Fluorescent, Install only	Ea	150	\$	\$
LU14	Luminaire, Underpass or Tunnel, Install only	Ea	50	\$	\$
LU15	Emergency or Exit Light Fixture	Ea	50	\$	\$
LU16	Luminaire, Metal Halide	Ea	20	\$	\$
LW01	Wash Hubbard's Cave Tiled Tunnel Walls	Ea	4	\$	\$
PA01	Alarm, Intrusion Override Key Switch	Ea	50	\$	\$
PC02	Coating, Concrete Surface	SF	5,000	\$	\$
PC03	Coating, Steel Surface	SF	1,000	\$	\$
PD01	Detection System, Fire	Ea	6	\$	\$
PG01	Gas Sensor, Remove and Replace	Ea	15	\$	\$
PI01	Inspection, Automatic Bus Transfer System	Ea	4	\$	\$
PI02	Inspection, Auto Transfer Switch	Ea	24	\$	\$
PI03	Inspection, Gas Detector System	Ea	47	\$	\$
PI04	Inspection, Switchgear System	Ea	1	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
PI05	Inspection, Motor Starter, Soft Start Type	Ea	5	\$	\$
PI06	Inspection, SCADA Radio Equipment	LS	2	\$	\$
PI07	Inspection, SCADA Radio	Ea	40	\$	\$
PI08	Inspection, Backflow Preventer	Ea	8	\$	\$
PM01	Pump Motor Balancing	Ea	6	\$	\$
PRB1	Pump Rebuild, Type 1	Ea	3	\$	\$
PRB2	Pump Rebuild, Type 2	Ea	4	\$	\$
PRB3	Pump Rebuild, Type 3	Ea	1	\$	\$
PRB4	Pump Rebuild, Type 4	Ea	15	\$	\$
PRB5	Pump Rebuild, Type 5	Ea	1	\$	\$
PRB6	Pump Rebuild, Type 6	Ea	1	\$	\$
PS01	Pump, SCADA Equipment, Type A, Furnish and Install	Ea	3	\$	\$
PS02	Pump, SCADA equipment, Type B, Furnish and Install	Ea	2	\$	\$
PS03	Pump, Vibration Testing and Analysis	Ea	256	\$	\$
PV01*	Vendor Budgetary Allowance for Pump Repair Services	LS	1	\$ 150,000.00	\$ 150,000.00
PV02*	Vendor Budgetary Allowance for Pump Bowl Replacement	LS	1	\$ 150,000.00	\$ 150,000.00
PV03*	Vendor Budgetary Allowance for Pump Replacement	LS	1	\$ 150,000.00	\$ 150,000.00

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
PW01	Wet Pit, Cleaning	SY	800	\$	\$
PW02	Wet Pit, Power Wash	Hr	200	\$	\$
SB01	8" LED Beacon, Flashing, Low Mount, 1 Face	Ea	1	\$	\$
SC03	Cabinet, Type 3, for Surveillance	Ea	1	\$	\$
SCP1	DMS Power Cabinet, Type 2, with Meter	Ea	1	\$	\$
SCP2	DMS Power Cabinet, Type 3, with Meter	Ea	1	\$	\$
SD01	Detector Loop Sensor Unit, 4 Channel Digital	Ea	6	\$	\$
SD02	Detector Loop Sensor Unit, 2 Channel Digital	Ea	10	\$	\$
SD03	Detector Loop, Round, Square or Rectangular	Ft	4,500	\$	\$
SD04	Blue Tooth Traffic Detector	Ea	24	\$	\$
SDM1	DMS, Front Access, Full Matrix, Color, NTCIP 1203 V2	Ea	1		
SDM2	DMS Batteries Telespot	Ea	10		
SDM3	DMS Battery, Skyline Sign	Ea	14		
SE01	Electric Service Upgrade and Grounding	Ea	1	\$	\$
SE02	Electrical Cable in Conduit, 4/c No. 18, Shielded Loop Detector	Ft	1,600	\$	\$
SEC1	Ethernet Media Converter	Ea	1	\$	\$
SES1	Ethernet Managed Switch	Ea	1	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
SI01	Inspection, Automatic Suppression System	Ea	2	\$	\$
SJ01	Junction Box, Stainless Steel	Ea	1	\$	\$
SLP1	Lightning Protection for Communication Lines	Ea	1	\$	\$
SLP2	Lightning Protection for Induction Loop Detectors	Ea	20	\$	\$
SP01	Paint Surveillance Installation	Ea	1	\$	\$
SP02	Paint Traffic Signal Mounting Hardware	Ea	1	\$	\$
SPB1	Post Base, Traffic Signal	Ea	1	\$	\$
SPG1	Post, Guard	Ea	1	\$	\$
SPT1	Post, Traffic Signal, 1' to 3' 6"	Ea	1	\$	\$
SPW1	Post, Wood	Ea	1	\$	\$
SR01	Radar Vehicle Detector	Ea	1	\$	\$
SR02	RVD Vehicle Detection Station	Ea	4	\$	\$
SR03	Radar Vehicle Detection Hub	Ea	1	\$	\$
SR04	RVD Station, Upgrade & Install	Ea	26	\$	\$
SR05	RVD Hub, Upgrade & Install	Ea	7	\$	\$
SR06	RVD Hub/RVD Station Radio Site Survey	LS	1	\$	\$
SS01	Signal Head, 1 Face	Ea	1	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
SS03	Signaling Load Relay, Mechanical	Ea	120	\$	\$
SSU1	Surge Protectors, AC Filtering	Ea	1	\$	\$
ST01	TELCO Suppression	Ea	20	\$	\$
ST02	Telecommunication Cable, Inline Connectors & Termination	Ea	20	\$	\$
ST03	Telecommunication Cable, No. 19/ 3 Pair	Ft	1,500	\$	\$
ST04	Telecommunication Cable, No. 19/ 25 Pair	Ft	1,500	\$	\$
ST05	Telecommunication Cable, install only	Ft	1,500	\$	\$
STN1	Tone Power Supply	Ea	1	\$	\$
STN2	Tone Rack Cradle Assembly for Field	Ea	1	\$	\$
STN3	Tone Receiver, FSK	Ea	1	\$	\$
STN4	Tone Transmitter, FSK	Ea	1	\$	\$
SU01	UPS System, Inspection	Ea	1	\$	\$
SU02	UPS System, Storage Battery, Remove & Replace	Ea	1	\$	\$
SV01*	Vendor Budgetary Allowance for Repair Services	LS	1	\$ 40,000.00	\$ 40,000.00
SV02*	Vendor Budgetary Allowance for ATMS Maintenance/Support	LS	1	\$ 75,000.00	\$ 75,000.00
TC01	Full-Actuated Controller in Type IV Cabinet	Ea	15	\$	\$
TC02	Full-Actuated Controller in Type V Cabinet	Ea	5	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
TC03	Full-Actuated Controller in Type IV Cabinet W/RR Equipment	Ea	5	\$	\$
TC04	Full-Actuated Controller	Ea	5	\$	\$
TC05	Install Existing Traffic Signal Controller	Ea	20	\$	\$
TC06	Install Existing Traffic Signal Controller and Cabinet	Ea	10	\$	\$
TC07	Controller Cabinet, Type IV or Type V	Ea	5	\$	\$
TC08	Controller and Cabinet Modification	Ea	25	\$	\$
TC09	FSK/Wire Communications Control Equipment	Ea	1	\$	\$
TC10	Fiber Optic Communications Control Equipment	Ea	20	\$	\$
TC11	Traffic Signal Master Controller	Ea	2	\$	\$
TC12	Install Telephone Line and Modem	Ea	10	\$	\$
TC13	Install Updated PROM Set at Existing Local or Master Controller	Ea	150	\$	\$
TC14	NEMA Conflict Monitor/MMU with Event Logging	Ea	5	\$	\$
TC15	UPS System	Ea	30	\$	\$
TCS1	Portable Changeable Message Sign	Ea	10	\$	\$
TD01	Drill Existing Handhole	Ea	20	\$	\$
TE01	Electric Cable No. 14 2/C	Ea	2,000	\$	\$
TE02	Electric Cable No. 14 3/C	Ea	2,000	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
TE03	Electric Cable No. 14 5/C	Ea	2,000	\$	\$
TE04	Electric Cable No. 14 7/C	Ea	2,000	\$	\$
TE05	Electric Cable No. 14 2/C, Twisted Shielded	Ea	3,000	\$	\$
TE06	Electric Cable No. 18 3 Pair, Twisted Shielded	Ea	200	\$	\$
TEC1	Electric Cable in Conduit, Tracer No. 14 1/C	Ea	5,000	\$	\$
TEC2	Electric Cable No. 14 3/C Railroad	Ea	750	\$	\$
TF01	Concrete Foundation, Type A	Ft	50	\$	\$
TF02	Concrete Foundation, Type D	Ft	24	\$	\$
TF03	Concrete Foundation, Type C	Ft	24	\$	\$
TF04	Concrete Foundation, Type E, 30 inch Diameter	Ft	60	\$	\$
TF05	Concrete Foundation, Type E, 36 inch Diameter	Ft	60	\$	\$
TF06	Concrete Foundatino, Type E, 42 inch Diameter	Ft	60	\$	\$
TF07	Concrete Foundation, Rebuild/Modify, Type D	Ea	5	\$	\$
TFB1	Flashing Beacon, Post Mounted, 1 Face	Ea	10	\$	\$
TFB2	Flashing Beacon, Span Wire Mounted	Ea	2	\$	\$
TFB3	Flashing Beacon, Solar, Post Mounted, 1 Face	Ea	30	\$	\$
TGS1	Traffic Signal Additional Grounding & Electric Service Upgrade	Ea	10	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
TL01	Inductive Loop Detector	Ea	100	\$	\$
TL02	Detector Loop	Ft	3,500	\$	\$
TLS1	LED Illuminated Sign	Ea	10	\$	\$
TM01	Microwave Vehicle Sensor	Ea	5	\$	\$
TMA1	Steel Mast Arm Assembly and Pole, 16' to 28'	Ea	1	\$	\$
TMA2	Steel Mast Arm Assembly and Pole, 30' to 44'	Ea	1	\$	\$
TMA3	Steel Mast Arm Assembly and Pole, 46' to 55'	Ea	2	\$	\$
TMA4	Steel Mast Arm Assembly and Pole, 56 ft to 65 ft	Ea	1	\$	\$
TMA5	Steel Mast Arm Assembly and Pole, 66 ft to 75 ft	Ea	1	\$	\$
TMA6	Relocate or Install Existing Mast Arm Assembly and Pole	Ea	2	\$	\$
TPP1	Pedestrian Pushbutton Post, Galvanized Steel, Type II	Ea	5	\$	\$
TPP2	Pedestrian Pushbutton	Ea	100	\$	\$
TR01	Rotate Signal Phasing at an Existing Traffic Signal Intersection	Ea	5	\$	\$
TR02	Re-assign System Detectors	Ea	5	\$	\$
TS01	Manhole Cover and Frame Grounding, Furnish and Install	Ea	10	\$	\$
TSD1	LED Signal Display	Ea	10	\$	\$
TSH1	Signal Head, 1 Face, 3 Section	Ea	25	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
TSH2	Signal Head, 1 Face, 4 Section	Ea	5	\$	\$
TSH3	Signal Head, 1 Face, 5 Section	Ea	15	\$	\$
TSH4	Signal Head Lens	Ea	5	\$	\$
TSH5	Pedestrian Signal Head, 1 Face	Ea	26	\$	\$
TSL1	LED Signal Head, 1 Face, 2 Section	Ea	5	\$	\$
TSL2	LED Signal Head, 1 Face, 3 Section	Ea	150	\$	\$
TSL3	LED Signal Head, 1 Face, 4 Section	Ea	25	\$	\$
TSL4	LED Signal Head, 1 Face, 5 Section	Ea	150	\$	\$
TSL5	LED Signal Head, Optically Programmed, 1F, 3S	Ea	50	\$	\$
TSL6	LED Signal Head, Optically Programmed, 1F, 5S	Ea	10	\$	\$
TSL7	LED Signal Head, Remotely Steerable Optics, 1 Face, 3 Section	Ea	2	\$	\$
TSL8	LED Signal Head, Remotely Steerable Optics, 1 Face, 5 Section	Ea	3	\$	\$
TSL9	LED Pedestrian Signal Head, 1 Face	Ea	25	\$	\$
TSL10	LED Pedestrian Signal Head, Countdown, 1 Face	Ea	100	\$	\$
TSR1	Remove Signal Section or Head	Ea	50	\$	\$
TSR2	Relocate or Install Existing Signal Head	Ea	25	\$	\$
TT01	Span Wire Traffic Signal Installation	Ea	5	\$	\$

NON-ROUTINE MAINTENANCE PAY ITEMS:

Item	Item Description	Units	Quantity	Unit Cost	Extension
TTM1	Thermoplastic Pavement Marking Line, 24"	Ea	500	\$	\$
TTP1	Traffic Signal Post, 10' to 18'	Ea	30	\$	\$
TTP2	Remove Traffic Signal Post	Ea	10	\$	\$
TTP3	Remove Mast Arm Assembly and Pole	Ea	2	\$	\$
TTP4	Relocate or Install Existing Signal Post	Ea	3	\$	\$
TVD1	Video Detection System, Complete Intersection	Ea	5	\$	\$
TVD2	Video Detection System, Single Camera/Processor	Ea	5	\$	\$
TWD1	Wireless Detection System, Complete Intersection	Ea	2	\$	\$
TWD2	Wireless Detection System, Single Approach	Ea	4	\$	\$
TWI1	Wireless Interconnect System	Ea	2	\$	\$

Sub-Total Non-Routine:	\$
Routine Maintenance/Yr (RM/Yr)=	\$
Total Contract Bid Price (Routine + Non-Routine)=	\$

* Non-Biddable Items

TABLE OF CONTENTS

SECTION 1:

ARTICLE 1.0	BIDDER INFORMATION & SPECIAL PRE-QUALIFICATION	1
1.1	Description of Work	1
1.2	Schedule of Prices – Submittal (for Attached Bidding Sheets)	1
1.3	Examination of Plans, Specifications, Special Provisions, and Site of Work	1
1.4	Proposal Guaranty	2
1.5	Requirement of Contract Bond	2
1.6	Insurance	2
1.7	Indemnification	3
1.8	Qualifications to Bid	3
1.9	Mandatory Pre-Bid Meeting	3
1.10	Bidders' Special Qualifications Submittal	4
1.11	Site Inspections	5
ARTICLE 2.0	DESCRIPTION OF WORK	6
ARTICLE 3.0	GENERAL CONTRACT REQUIREMENTS	6
3.1	BASIC CONTRACT PROVISIONS	6
3.1.1	TERM OF CONTRACT	6
3.1.2	RENEWAL	7
3.1.3	COMPLETION OF ANNUAL WORK	7
3.1.4	DE-AUTHORIZATION AND/OR CANCELLATION OF WORK	8
3.2	SUBCONTRACTING OF WORK	8
3.2.1	GENERAL REQUIREMENTS	8
3.2.2	SUBCONTRACTING LIMITATIONS	8
3.2.3	SUBCONTRACTOR BILLING	9
3.3	CONTRACT START-UP	9
3.3.1	BASIC REQUIREMENTS	9
3.3.2	ELECTRICAL SYSTEMS SURVEY	9
3.3.3	STATE STOCK TRANSFER	9
3.3.4	CONTRACTOR OWNED SPARE PARTS PROCUREMENT	10
3.3.5	LOCKS AND KEYS	10
3.4	END OF CONTRACT TRANSITION	10
3.4.1	STATE STOCK INVENTORY RETURN	10
3.4.2	LOCK AND KEY TURNOVER	10
3.4.3	EMCMS CONTINUITY	11
3.5	CONTRACTOR PERFORMANCE	11
3.5.1	PRIORITY OF WORK	11
3.5.2	SUSPENSION OF WORK	11
3.5.3	UNSATISFACTORY SERVICE	11
3.5.4	WITHHOLDING AND RELEASE OF FUNDS	11
3.5.5	LIQUIDATED DAMAGES	12
3.6	CONTRACTOR FACILITY REQUIREMENTS	12
3.6.1	GENERAL REQUIREMENTS	12
3.6.2	EMC OFFICE	13
3.6.3	EMC DISPATCH CENTER	13
3.6.4	EQUIPMENT SERVICE SHOP	13
3.6.5	STORAGE FACILITIES	14
3.7	CONTRACT ADMINISTRATION AND CORRESPONDENCE	15

3.7.1	DAILY CONTRACT ADMINISTRATION	15
3.7.2	FORMAL CORRESPONDENCE	15
3.7.3	INFORMAL CORRESPONDENCE	15
3.7.4	WORK STATUS MEETINGS	16
3.7.5	MONTHLY PAY MEETING	16
3.8	CONTRACT PERSONNEL	16
3.8.1	GENERAL RESPONSIBILITIES	16
3.8.2	CONTRACT PERSONNEL DOCUMENTATION AND SUBMITTALS	16
3.8.3	GENERAL WORKFORCE RESPONSIBILITIES	17
3.8.4	ORGANIZATIONAL DOCUMENTATION	17
3.8.5	PRINCIPAL (OWNER) OR PROJECT MANAGER RESPONSIBILITIES	18
3.8.6	SYSTEM MANAGER RESPONSIBILITIES	18
3.9	DEDICATED PERSONNEL POSITIONS	19
3.9.1	RESPONSIBILITIES OF DEDICATED PERSONNEL	19
3.9.2	ADVANCED SYSTEMS FIELD TECHICIAN	19
3.9.3	EMC ADMINISTRATIVE MANAGER	20
3.9.4	LIGHTING AND EXTRA SYSTEMS MANAGER	20
3.9.5	LIGHTING NIGHT-RIDER PATROLMAN	21
3.9.6	PUMP STATION SPECIALIST (WORKING FOREMAN)	21
3.9.7	PUMP STATION SERVICE CREW	22
3.9.8	REPAIR CREW AND SUPPLEMENTAL ELECTRICIANS	22
3.9.9	SCADA SPECIALIST AND TRAINEE	24
3.9.10	SURVEILLANCE/DMS SPECIALIST (WORKING FOREMAN)	24
3.9.11	SURVEILLANCE/DMS PATROLMEN	25
3.9.12	SURVEILLANCE/DMS CREW TRAINEE	25
3.9.13	TRAFFIC SIGNAL SYSTEM MANAGER	26
3.10	ASSIGNED CONTRACT PERSONNEL POSITIONS	26
3.10.1	RESPONSIBILITIES OF ASSIGNED CONTRACT PERSONNEL	26
3.10.2	ADVANCED SYSTEMS SPECIALIST/MANAGER	27
3.10.3	DISPATCH CENTER SUPERVISOR	27
3.10.4	DISPATCH CENTER PERSONNEL	27
3.10.5	EMC ADMINISTRATIVE ASSISTANT	28
3.10.6	EQUIPMENT SERVICE SHOP PERSONNEL	28
3.10.7	PATROLMEN	29
3.10.8	PUMP STATION SYSTEM MANAGER	29
3.10.9	TRAFFIC SIGNAL SYSTEMS/RAILROAD SPECIALIST	30
3.10.10	TRAFFIC SIGNAL SYSTEMS ASSISTANT	31
3.11	PERSONNEL DOCUMENTATION	31
3.12	PERSONNEL TRAINING PROGRAMS	32
3.12.1	GENERAL REQUIREMENTS	32
3.12.2	OSHA AND OTHER SAFETY TRAINING	32
3.12.3	NATIONAL ELECTRICAL CODE/GROUNDING/LIGHTNING PROTECTION	32
3.12.4	EQUIPMENT/SYSTEM TRAINING	32
3.13	SAFETY PROGRAMS AND REQUIREMENTS	34
3.13.1	GENERAL REQUIREMENTS	34
3.13.2	CONFINED SPACE ENTRY AND TRAINING	35
3.13.3	HAZARDOUS MATERIALS OPERATIONS	35
3.14	TRAFFIC CONTROL AND SAFETY	36
3.14.1	TRAFFIC CONTROL PLAN	36

3.14.2	KEEPING THE EXPRESSWAY OPEN TO TRAFFIC	36
3.14.3	TRAFFIC CONTROL DEFICIENCIES	37
3.15	VEHICLES	37
3.15.1	GENERAL REQUIREMENTS	37
3.15.2	VEHICLES FOR TRAFFIC SIGNAL PATROLMEN	38
3.15.3	VEHICLES FOR SURVEILLANCE SYSTEM PATROLMEN, MANAGER, & TRAINEE	39
3.15.4	VEHICLES FOR SYSTEM MANAGERS, TS, SCADA AND ADVANCED SYSTEMS SPECIALISTS	40
3.15.5	VEHICLES FOR TS SYSTEM/RAILROAD ASSISTANT AND SCADA SPECIALIST TRAINEE	41
3.15.6	VEHICLES FOR PS SPECIALIST, PS CREW AND LIGHTING SYSTEM NIGHT PATROLMAN	41
3.15.7	VEHICLE FOR ADVANCED SYSTEMS FIELD TECHNICIAN	42
3.16	EQUIPMENT FOR MAINTENANCE OPERATIONS	43
3.17	CONSTRUCTION TEST EQUIPMENT	44
ARTICLE 4.0 ROUTINE MAINTENANCE WORK AND PAYMENT		47
4.1	CONTROL OF WORK	47
4.2	PRIORITY OF WORK	47
4.3	CONTRACTOR EMERGENCY RESPONSE	48
4.4	CONTRACTOR CALL-OUT POLICY	48
4.5	SPECIAL RESPONSE SITUATIONS	49
4.5.1	UNAUTHORIZED ACCESS OR TAMPERING OF IDOT PROPERTY	49
4.5.2	VANDALISM	49
4.5.3	INTRUSION AT FACILITIES AND/OR THEFT OF IDOT PROPERTY	49
4.6	LOCATING CABLE OR OTHER COMPONENTS OF IDOT SYSTEMS	50
4.7	PROVIDING SYSTEM SERVICES	50
4.8	GENERAL MAINTENANCE WORK	50
4.9	REPAIR OF DAMAGED OR MALFUNCTIONING SYSTEM EQUIPMENT ⁵¹	
4.9.1	GENERAL REQUIREMENTS	51
4.9.2	REPAIRS TO EQUIPMENT DAMAGED BY DEPARTMENT PERSONNEL	52
4.9.3	DAMAGE CAUSED BY CONSTRUCTION (3 RD PARTY DAMAGE)	52
4.9.4	WORK REQUEST MADE BY 3 RD PARTY	53
4.9.5	DAMAGE CAUSED BY MOTORISTS	53
4.10	PATROL INSPECTIONS	55
4.10.1	PATROL OF SYSTEMS	55
4.10.2	NIGHT OUTAGE PATROL SURVEY	55
4.10.3	RED-LIGHT RUNNING CAMERA SURVEY	56
4.11	COORDINATION WITH ELECTRIC UTILITY COMPANIES, CONTRACTORS, AND OTHERS	57

4.12	ROUTINE MAINTENANCE TRANSFER OF MAINTENANCE	57
4.13	ROUTINE MAINTENANCE PAYMENT	58
4.14	STATE STOCK	59
4.14.1	GENERAL REQUIREMENTS	59
4.14.2	DISBURSEMENT OF STATE STOCK	59
4.14.3	RECEIPT OF STATE STOCK	60
4.14.4	DISPOSAL OF SCRAP	60
4.14.5	STATE STOCK DOCUMENTATION	61
4.15	CONTRACTOR SPARE PARTS INVENTORY RESPONSIBILITIES	61
4.15.1	LIGHTING SYSTEM – SUGGESTED STARTING QUANTITIES	62
4.15.2	PUMP STATION SYSTEM – SUGGESTED STARTING QUANTITIES	63
4.15.3	TRAFFIC SIGNAL SYSTEM – SUGGESTED STARTING QUANTITIES	64
4.16	MATERIAL AND EQUIPMENT	64
4.16.1	USE OF APPROVED MATERIALS	64
4.16.2	SUBMITTALS FOR APPROVAL	64
4.16.3	FORMS	65
4.16.4	CERTIFICATION REQUIREMENTS	65
4.16.5	SAMPLES	65
4.16.6	NEW MATERIALS INSPECTION REQUIREMENTS	65
4.17	DOCUMENTATION SUBMITTALS	65
4.17.1	CONTRACTOR ADVISORY	65
4.17.2	DAILY WORK AGENDA	66
4.17.3	DISPATCH AND CALL-OUT SCHEDULE	66
4.17.4	EMC TICKETS	66
4.17.5	PLAN RECORDS MANAGEMENT	68
4.17.6	MONTHLY ROUTINE WORK BOOK SUBMITTAL	68
	ARTICLE 5.0 – NON-ROUTINE MAINTENANCE WORK AND PAYMENT	69
5.1	CONTROL OF WORK	69
5.2	UNIT PRICE AUTHORIZATIONS	70
5.3	AGREED-PRICE AUTHORIZATIONS	70
5.4	FORCE ACCOUNT AUTHORIZATIONS	71
5.5	EXPENSES INCURRED BY THE DEPARTMENT	71
5.6	ACCEPTANCE OF NON-ROUTINE WORK ASSIGNMENTS	72
5.7	NON-ROUTINE WORK COMPLETION TIME	72
5.8	NON-ROUTINE WORK COMPLETION NOTIFICATION	72
5.9	NON-ROUTINE EMCMS WORK COMPLETION REQUIREMENTS	72
5.10	EMCMS WORK INSPECTION APPROVAL	72
5.11	EMCMS CORRECTIVE WORK LIST	72
5.12	EMCMS NON-ROUTINE WORK INVOICING PROCEDURES	73
5.13	PAYMENT TO SPECIAL VENDORS	73
5.14	MONTHLY NON-ROUTINE WORK STATUS	73
	ARTICLE 6.0 – ADVANCED SYSTEMS	74
6.1	DESCRIPTION OF WORK	74
6.2	ROUTINE MAINTENANCE ITEM DESCRIPTIONS	74
6.3	A-1a: REVLAC – REVERSIBLE LANE ACCESS CONTROL SYSTEM	75
6.4	A-1b: RACS – ROOSEVELT RAMP ACCESS CONTROL SYSTEM	75

6.5	A-1c: EXPRESSWAY RAMP GATE SYSTEM	76
6.6	A-2: TRAFFIC MONITORING CAMERAS	76
6.7	A-3a and A-3b: BUILDINGS, HUTS, BASE STATIONS, AND TOWER EQUIPMENT	76
6.7.1	REVLAC BUILDINGS A, C, D, AND E	77
6.7.2	REVLAC BUILDING B	77
6.7.3	ELECTRICAL MAINTENANCE FIELD OFFICE/MAT LAB	77
6.7.4	EMC DISPATCH CENTER (IDOT Equipment to be Maintained)	78
6.7.5	EMERGENCY TRAFFIC PATROL OFFICE (ETP)	78
6.7.6	I 290 HUT – OB I 120 @ West of I 90 94	79
6.7.7	I 55 HUT – I 55 @ 26 th St & Wallace	79
6.7.8	I 57 HUT A – I 57 @ Parnell Ave	79
6.7.9	I 57 HUT B – I 57 @ I 80	79
6.7.10	RACS ROOSEVELT RAMP BUILDING	80
6.7.11	IDOT DISTRICT 1 HEADQUARTERS	81
6.7.12	FOSTER TOWER/BASE STATION I 94 @ Foster Ave	82
6.7.13	HILLSIDE TOWER HUTS – I 294 @ I 88	83
6.7.14	NORDIC TOWER/HUT – I 355 @ Nordic Rd	83
6.7.15	PLATO TOWER/BASE STATION – IL 47 @ McDonald Rd	84
6.7.16	SCHAUMBURG TOWER/HUT – I 90 @ Roselle Rd	84
6.7.17	TRAFFIC SYSTEMS CENTER – Oak Park – 445 Harrison St	84
6.7.18	LOCATIONS UNDER CONSTRUCTION – Equipment Proposed	
6.8	ROUTINE MAINTENANCE OF THE COMMUNICATIONS SERVICE NETWORK	86
6.8.1	FIBER OPTIC NETWORK	86
6.8.2	REVLAC COMMUNICATIONS	87
6.8.3	REVLAC CONTROL SYSTEM	87
6.8.4	REVLAC TELEPHONE SYSTEM	87
6.8.5	RACS CONTROL SYSTEM	88
6.8.6	SONET SYSTEM	88
6.8.7	CONTRACTOR WIRED COMMUNICATIONS	88
6.8.8	CONTRACTOR WIRELESS COMMUNICATIONS	89
6.8.9	EMAIL COMMUNICATIONS	90
6.8.10	FACSIMILE COMMUNICATIONS	90
6.8.11	ELECTRICAL MAINTENANCE CONTRACT MANAGEMENT SYSTEM	90
6.9	CONTRACTOR IMMEDIATE RESPONSE AND REPAIR	91
6.9.1	GENERAL REQUIREMENTS	91
6.9.2	REVLAC AND RACS	91
6.9.3	OTHER ADVANCED SYSTEMS EQUIPMENT	92
6.9.4	COMCENTER HVAC	92
6.9.5	FIBER OPTIC CABLE REPAIRS	92
6.9.6	GCM GATEWAY NETWORK	93
6.9.7	BUILDING, HUT AND BASE STATION EQUIPMENT REPAIRS	93
6.9.8	TOWER OR BASE STATION (TOWER) STRUCTURAL REPAIRS	93
6.9.9	SPECIAL RESPONSE AREAS	93
6.10	CONTRACTOR NORMAL CORRECTIVE RESONSE AND REPAIR	94
6.10.1	GENERAL REQUIREMENTS	94
6.10.2	EXPRESSWAY RAMP GATES	95
6.10.3	AVL (AUTOMATIC VEHICLE LOCATOR)	95
6.11	REQUESTED ROUTINE WORK	95
6.11.1	START AND COMPLETION OF WORK	96

6.11.2	COMENTER DVD INSPECTION	96
6.11.3	CCTV	96
6.11.4	FIBER LOGGING AND LABELING	96
6.11.5	LABELING OF EQUIPMENT	96
6.11.6	CCTV VIDEO IMAGE LABELING	96
6.11.7	REVLAC AND RACS GATES AND BARRIER STRIPING	96
6.11.8	EQUIPMENT AND NETWORK IDENTIFICATION AND DOCUMENTATION	97
6.12	MONTHLY BUILDING AND HUT INSPECTION	97
6.13	TRANSITION PATROL	98
6.14	SITE MAINTENANCE – OUTDOOR	98
6.14.1	GENERAL REQUIRMENTS	98
6.14.2	SPRING/SUMMER/FALL MAINTENANCE	98
6.14.3	WINTER MAINTENANCE	98
6.15	SITE MAINTENANCE – INTERIOR	98
6.15.1	MONTHLY GENERAL EQUIPMENT MAINTENANCE	98
6.15.2	MONTHLY BATTERY AND UPS INSPECTION	98
6.15.3	REVLAC & RACS BUILDING FLOOR MAINTENANCE	99
6.15.4	YEARLY FIRE EXTINGUISHER MAINTENANCE	99
6.16	PREVENTIVE MAINTENANCE PROGRAMS	99
6.16.1	YEARLY RADIO TOWER SITE INSPECTION AND PM	99
6.16.2	BI-YEARLY SWING GATE PM (FOR REVLAC AND RACS)	100
6.16.3	BI-YEARLY ROTATING DRUM SIGNS PM	100
6.16.4	BI-YEARLY REVLAC AND RACS LED AND FIBEROPTIC SIGN PM	100
6.16.5	BI-YEARLY REVLAC CATTRON PM	101
6.16.6	BI-YEARLY RAMP GATE PM	101
6.16.7	YEARLY RESTRAINING BARRIER PM	101
6.16.8	YEARLY CONTROL BILDINGS, COMMUNICATION BUILDINGS, AND SYSTEMS PM	100
6.16.9	YEARLY MICROWAVE RADIO PM	105
6.16.10	YEARLY CCTV CAMERA PM	106
6.16.11	YEARLY AVL EQUIPMENT PM	106
6.16.12	YEARLY FIBER TESTING AND INSPECTION	106
6.16.13	YEARLY LIGHTING SCADA BATTERY REPLACEMENT	106
6.16.14	YEARLY BATTERY AND UPS TESTING	106
6.16.15	YEARLY FIBER ACCESS AND SPLICE BOX INSPECTION	107
6.17	SOFTWARE MANITENANCE SUPPORT	107
6.18	WARRANTY AND MAINTENANCE AGREEMENTS	108
6.19	CONTRACTOR FURNISHED MATERIALS, EQUIPMENT AND LABOR	112
6.20	DEPARTMENT FURNISHED MATERIALS AND EQUIPMENT	112
ARTICLE 7.0 LIGHTING, NAVIGATION AND SIGN ILLUMINATION SYSTEM		113
7.1	SYSTEM DESCRIPTION AND MAINTENANCE RESPONSIBILITIES	113
7.2	LIGHTING SYSTEM ROUTINE MAINTENANCE PAY ITEMS	113
7.3	RESPONSE AND REPAIR TIME REQUIREMENTS	114

7.4	ROUTINE MAINTENANCE EQUIPMENT RESPONSIBILITIES	115
7.4.1	DECAL	115
7.4.2	CONTROLLER	115
7.4.3	LIGHT POLE UNIT	116
7.4.4	LIGHT TOWER	117
7.4.5	LUMINAIRES	117
7.4.6	CABLE	118
7.4.7	SIGN	119
7.5	LIGHTING SCADA SYSTEM	119
7.6	MONTHLY DAYTIME TUNNEL LIGHTING INSPECTIONS	120
7.7	PREVENTIVE MAINTENANCE PROGRAMS	120
7.7.1	YEARLY CLOCK, RADIO, AND CABINET INSPECTION	121
7.7.2	FIRST YEAR SCADA BACKUP BATTERY REPLACEMENT FOR RADIO	121
7.7.3	YEARLY CONTROL CABINET FULL INSPECTION	121
7.7.4	YEARLY LIGHT POLE AND UNDERPASS SAFETY INSPECTION	122
7.7.5	YEARLY LIGHT TOWER SAFETY INSPECTION	123
7.7.6	YEARLY STRUCTURAL ENGINEER LIGHTTOWER FULL INSPECTION AND ANALYSIS	124
7.7.7	YEARLY PHOTO-CELL CALIBRATION	124
7.7.8	YEARLY NAVIGATION LIGHTING INSPECTION	124
7.7.9	YEARLY LIGHTING CONTROLLER REPLACEMENT	125
7.8	NON-ROUTINE MAINTENANCE	131
7.9	LOGS AND FORMS	131
ARTICLE 8.0 PUMP STATION SYSTEM		132
8.1	PUMP STATION SYSTEM DESCRIPTION	132
8.2	GENERAL MAINTENANCE RESPONSIBILITIES	132
8.3	SITE MAINTENANCE	132
8.4	RESPONSE MAINTENANCE FOR PS SYSTEM	133
8.4.1	CONTRACTOR PS CALL-OUT RESPONSE	133
8.4.2	STATION PROCEDURES AND RESPONSE DOCUMENTATION	133
8.4.3	PS ALARM RESPONSE	134
8.4.4	STATION PRE-STORM CONDITION CHECK	135
8.4.5	WATER ON PAVEMENT SITUATIONS	135
8.4.6	STATION POST STORM CONDITION CHECK	135
8.4.7	TEMPORARY PUMPING REQUIREMENTS	135
8.5	SERVICE COMPANIES	136
8.5.1	SUBMITTALS OF SERVICE COMPANY NAMES	136
8.5.2	SERVICE COMPANY WORK	136
8.6	SCHEDULED DAILY MAINTENANCE	136
8.6.1	DAILY SCADA MAINTENANCE	136
8.6.2	DAILY AEGIS MAINTENANCE	137
8.6.3	DOCUMENTATION OF DAILY SCHEDULED MAINTENANCE	138

8.7	MONTHLY PS QUICK CHECK – ALL STATIONS	138
8.8	MONTHLY PREVENTIVE MAINTENANCE PROGRAM	139
8.8.1	MONTHLY PUMP OPERATION INSPECTION – ALL STATIONS	140
8.8.2	MONTHLY PUMP MAINTENANCE	140
8.8.3	MONTHLY AUTOMATIC TRASH RACK MAINTENANCE	140
8.8.4	MONTHLY BAR SCREEN MAINTENANCE	141
8.8.5	MONTHLY AIR COMPRESSOR INSPECTION	141
8.8.6	MONTHLY FLOW METER INSPECTION	141
8.8.7	MONTHLY GENERATOR INSPECTION	141
8.8.8	MONTHLY TRANSFER SWITCH OPERATION INSPECTION	142
8.8.9	MONTHLY AIR INDUCTION INSPECTION	142
8.8.10	MONTHLY AEGIS MONTHLY INSPECTION – ALL STATIONS	142
8.8.11	MONTHLY STATE STOCK INVENTORY MAINTENANCE	142
8.9	SEMI-YEARLY PREVENTIVE MAINTENANACE PROGRAMS	143
8.9.1	SEMI-YEARLY DRY PIT/WET PIT SUBMERSIBLE PUMP MAINTENANCE	143
8.9.2	SEMI-YEARLY AUTOMATIC TRASH RACK MAINTENANCE	143
8.9.3	SEMI-YEARLY VERTICAL PUMP MOTOR MAINTENANCE	143
8.9.4	SEMI-YEARLY ACTUATORS, VALVES & SLUICE GATE OPERATION	143
8.9.5	SEMI-YEARLY SIDE VOLUTE DISCHARGE PUMP MAINTENANCE	143
8.10	YEARLY PREVENTIVE MAINTENANCE PROGRAMS	144
8.10.1	YEARLY AIR INDUCTION HEATER AND SPACE HEATER INSPECTION	144
8.10.2	YEARLY AEGIS ALARM SYSTEM INSPECTION – ALL STATIONS	144
8.10.3	YEARLY SCADA INSPECTION AND DOCUMENTATION – ALL STATIONS	144
8.10.4	YEARLY WET PIT INSPECTION – ALL STATIONS	145
8.10.5	YEARLY PUMP CONTROL SYSTEM INSPECTION – ALL STATIONS	145
8.10.6	YEARLY PUMP STATION INSPECTION AND MAINTENANCE ALL STATIONS	146
8.10.7	YEARLY PUMP STATION ROOF INSPECTION AND MAINTENANCE ALL STATIONS	146
8.10.8	YEARLY PUMP CAPACITY, MOTOR CURRENT, VOLTAGE, MOISTURE, MEGGER TEST – ALL STATIONS	146
8.10.9	YEARLY IMPELLER ADJUSTMENT OF VERTICAL AXIAL FLOW PUMPS	147
8.10.10	YEARLY SUBMERSIBLE PUMP INSPECTION	148
8.10.11	YEARLY OIL ANALYSIS – ALL STATIONS	148
8.10.12	YEARLY MAIN CIRCUIT BREAKER TESTING INSPECTION	148
8.10.13	YEARLY FLOW METER INSPECTION	149
8.10.14	YEARLY FIRE ALARM SYSTEMS INSPECTION	149
8.10.15	YEARLY MOTOR CONTROL CENTER INSPECTION – ALL STATIONS	149
8.10.16	TUBE TYPE PUMP MAINTENANCE – YEAR 2011 ONLY	150
8.10.17	YEOMAN PUMP MAINTENANCE – YEAR 2012 ONLY	151
8.10.18	YEARLY GENERATOR MAINTENANCE	151
8.10.19	YEARLY EQUIPMENT IDENTIFICATION PROGRAM	151
8.11	PUMP STATION NON-ROUTINE MAINTENANCE	152
8.12	LOGS AND FORMS	152
8.13	TABLES	153
ARTICLE 9.0 SURVEILLANCE AND DYNAMIC MESSAGE SIGN SYSTEM		160
9.1	SURVEILLANCE AND DYNAMIC MESSAGE SIGN SYSTEM DESCRIPTION	160
9.1.1	SURVEILLANCE EQUIPMENT	160

9.1.2	DMS SYSTEM EQUIPMENT	160
9.1.3	DMS FIELD LOCATIONS	160
9.1.4	TRAFFIC SYSTEMS CENTER	160
9.1.5	IDOT COMCENTER	163
9.1.6	GENERAL MAINTENANCE RESPONSIBILITIES	163
9.2	RESPONSE AND REPAIR TIME REQUIREMENTS	163
9.3	SPECIFIC MAINTENANCE RESPONSIBILITIES	164
9.4	DAILY TICKET REVIEW	167
9.5	DMS PATROL REQUIREMENTS	168
9.6	DMS SPECIAL INVENTORY REQUIREMENTS	169
9.7	STATE STOCK FOR THE SURVEILLANCE SYSTEM	169
9.8	QUARTERLY REMOTE DATA COLLECTION, STANDALONE STATION INSPECTIONS	169
9.9	SEMI-MONTHLY RAMP METERING CABINET INSPECTION	169
9.10	MONTHLY RAMP METERING CLEANING	170
9.11	MONTHLY DMS CABINET INSPECTION AND CLEANING	170
9.12	MONTHLY CCTV INSPECTION	171
9.13	MONTHLY SIGN ENCLOSURE CLEANING	171
9.14	YEARLY SURVEILLANCE CABINET INSPECTION AND CLEANING	171
9.15	SEMI-ANNUAL FIR ALARM INSPECTION – TSC BUILDING	172
9.16	TSC UPS MAINTENANCE	172
9.17	YEARLY SIGN SUPPORT INSPECTION	173
9.18	YEARLY GROUNDING AND ELECTRIC SERVICE UPGRADE	173
9.19	LOGS AND FORMS	176
ARTICLE 10.0 TRAFFIC SIGNAL SYSTEM		177
10.1	TRAFFIC SIGNAL SYSTEM DESCRIPTION	177
10.1.1	TRAFFIC SIGNALS (Refer to Section 3, T-1A)	177
10.1.2	SPAN WIRE TRAFFIC SIGNAL (Refer to Section 3, T-1B)	178
10.1.3	FLASHING OVERHEAD MOUNT BEACONS (Refer to Section 3, T-2A)	178
10.1.4	FLASHING LOW MOUNT BEACONS (Refer to Section 3, T-2B)	178
10.2	GENERAL MAINTENANCE RESPONSIBILITIES	178
10.3	RESPONSE AND REPAIR TIME REQUIREMENTS	179
10.4	REPAIR OF SIGNAL LAMP/MODULE OUTAGES	181

10.5	SIGNAL DAMAGE EQUIPMENT REPLACEMENT	181
10.6	POWER OUTAGES AND FLASHING OPERATION PROCEDURES	182
10.7	NEW, REVISED OR TRANSFERRED TRAFFIC SIGNAL AND FLASHING BEACON INSPECTIONS	182
10.8	PATROL INSPECTIONS	183
10.8.1	GENERAL REQUIREMENTS	183
10.8.2	ROUTINE PATROL DUTIES AND RESPONSIBILITIES	183
10.8.3	CONTROLLER AND CABINET INSPECTIONS	184
10.9	SITE MAINTENANCE	185
10.10	GROUP RELAMPING OF FLASHING BEACON AND TRAFFIC SIGNAL LOCATIONS	185
10.10.1	SCHEDULES AND REPORTS	186
10.10.2	DAILY REPORTS	186
10.10.3	LENS CLEANING AND REPLACEMENT	186
10.10.4	SPECIAL TYPES OF LAMPS REQUIRED FOR SPECIAL INDICATIONS	186
10.10.5	SPECIFICATION OF LAMPS	187
10.10.6	LAMP DISPOSAL	187
10.10.7	LED RELAMPING	187
10.11	ANNUAL CONFLICT MONITOR TESTING PROGRAM	188
10.12	ANNUAL MAST ARM ASSEMBLY AND POLE INSPECTION	188
10.13	ANNUAL RAILROAD INTERCONNECTED TRAFFIC SIGNAL INSPECTION	189
10.14	DETECTOR LOOP MAINTENANCE AND REPLACEMENT	189
10.14.1	TRAFFIC SIGNAL LOOP RESEALING	189
10.14.2	DETECTOR LOOP REPLACEMENT	189
10.15	VIDEO DETECTION	190
10.16	INTEGRATED CLOSED-LOOP TRAFFIC SIGNAL MONITORING SYSTEM	190
10.16.1	CONTRACTOR RESPONSIBILITIES	190
10.16.2	DEPARTMENT LAN AND SOFTWARE SUPPORT	191
10.16.3	CONTRACTOR MONITORING DUTIES FOR THE CLMS	191
10.16.4	RESPONSIBILITIES	191
10.17	TRAFFIC SIGNAL INVENTORY	194
10.18	PAINTING BY OTHER ON STATE MAINTAINED FACILITIES	194
10.19	TRAFFIC SIGNAL GROUNDING AND ELECTRICAL SERVICE UPGRADE	194
10.20	RAILROAD INSURANCE	197
10.21	NON-ROUTINE MAINTENANCE	197
10.21.1	NON-ROUTINE WORK IN THE RAILROAD RIGHT OF WAY	198
10.22	GPS RECORDING	198
10.23	LOCKS AND KEYS	199

10.24	LOGS AND FORMS	199
-------	----------------	-----

ARTICLE 11.0	EXTRA SYSTEMS	200
---------------------	----------------------	------------

11.1	EXTRA SYSTEMS DESCRIPTION	200
11.2	GENERAL MAINTENANCE RESPONSIBILITIES	200
11.3	RESPONSE AND REPAIR TIME REQUIREMENTS	200
11.4	HIGHWAY MAINTENANCE YARD AND SIGN SHOP FACILITY LOCATIONS	200
11.4.1	SEMI-YEARLY INSPECTION	201
11.4.2	YEARLY SERVICE ENTRANCE AND FEEDER PANEL INSPECTION	201
11.4.3	YEARLY LIGHTING CLOCK CONTROL INSPECTION	201
11.5	MAINTENANCE YARD LIGHT REPLACEMENT	201
11.6	HIGHWAY REST AREA LOCATIONS	203
11.7	ICE BEACONS	204
11.8	WEIGH STATIONS	204
11.9	BASE STATIONS	205
11.10	MOVEABLE BRIDGE MONITORING	205
11.11	HIGHWAY ADVISORY SIGN LOCATIONS	205
11.12	MATTESON FLOOD WARNING SYSTEM	206
11.13	SCHEDULED WORK CHART	206
11.14	NON-ROUTINE MAINTENANCE PAY ITEMS	207
11.15	LOGS AND FORMS	207

ARTICLE 12.0	DEFINITIONS, SPECIFICATIONS & STANDARDS	208
---------------------	--	------------

ARTICLE 13.0	TABLES AND CHARTS	216
---------------------	--------------------------	------------

Comparison of Maintained Locations to Equivalent Location Units	216
All Systems Ticket History	217
Ticket History by Year by System	218
Advanced Systems Ticket History	220
Motorist Caused Damage Ticket History	221
Lighting Outage History – Outages Repaired by Month	222

SECTION 2 -- SPECIAL PROVISIONS - NON-ROUTINE MAINTENANCE PAY ITEMS

ACC1	CCTV Dome Camera Assembly, Color, PTZ Control, Furnish Onl	223
ACC2	CCTV Camera Assembly, Color, Fixed Control, Furnish Only	223
ACM1	CCTV Color Monitor, Quad, 4", Furnish Only	223
ACM2	CCTV Color Monitor, 8.4", Furnish Only	224
ACM3	CCTV Color Monitor, Dual, 8.4", Furnish Only	225
ACM4	CCTV Color Monitor, 12", Furnish Only	225
ACP1	CCTV Camera Pole, Furnish Only	226
ACP2	CCTV Camera Lowering System, Furnish and Install	226
ALD1	LED Chevron Sign, Furnish Only	227
ALD2	LED Auxiliary Sign, Furnish Only	227
ALD3	LED Lane Usage Sign, Furnish Only	228
ALD4	LED Gore Sign, Furnish Only	228
ARR1	REVLAC Restraining Barrier Tape Cartridge, Refurbish	232
ARR2	REVLAC Restraining Barrier Dagnet Assembly, Furnish Only	233
ASC1	Swing Gate Controller, Furnish Only	234
ASD1	Swing Gate Drivetrain Assembly, Furnish Only	242
ASG1-6	Swing Gate Arm, Furnish Only	244
ASG7	Swing Gate Arm Capstan and Bracket Assembly, Furnish Only	245
AV01	Video Communication Hut, Furnish and Install	247
AXB1	Budgetary Allowance for REVLAC Remote Control Modifications	249
AXB2	Budgetary Allowance for PLC Control System Repair	250
AXB3	Budgetary Allowance for State Stock Parts	250
AXB4	Budgetary Allowance for Remote Network Monitoring System	250
GAC1	Aerial Cable with Messenger Wire	250
GAS1	Asphalt, Remove and Replace	251
GC01–GC06	Conduit, Galvanized Steel, Attached to Structure	251
GC07–GC08	Conduit, Galvanized Steel, Encased In Concrete	252
GC09–GC10	Conduit, Galvanized Steel, in Ground	253
GC11–GC12	Conduit, Non-Metallic, Coilable, in Ground	253
GC13	Conduit, PVC, for Buildings, 1", Schedule 40	254
GC14	Conduit, Removal	255
GCC1	Controller, Calcium Chloride Pump	256
GCX1	Coaxial Cable	256
GE01–GE02	Electric Cable Assembly	257
GE03–GE07	Electrical Cable in Conduit, EPR	257
GE08	Electric Cable, Pull Or Remove	257
GE09	Electrical Cable, THWN	258
GE10	Electric Service Disconnect, 2 or 3 Wire, Combination	260
GE11	Electric Service Disconnect, 2 or 3 Wire, Surveillance/Traffic	261
GE12–GE13	Electric Service	262
GF01	Fiber Optic Trunk/Distribution/Lateral Cable Single Mode Up To 96 SM	263
GF02	Fiber Optic Lateral Installation SM	269
GF03	Fiber Optic Cable, Hybrid 12 MM And 12 SM	269
GF04	Fiber Optic Termination Panel, 12F or 24F	270
GF05	Fiber Optic Patch Panel 96 SM	271
GF06	Fiber Optic Splice Closure	271
GF07	Fiber Optic Innerduct, up to 1 ½"	271
GF08	Fiber Optic Cable, Install Only	273
GFC1	Foundation, Concrete, Type 1	273
GFR1	Foundation Removal	274
GGR1	Ground Rod	275
GH01–GH04	Handhole	276
GH05	Handhole, Heavy Duty, Special	276
GH06	Handhole, Remove	277

GH07	Handhole, Rebuild	277
GH08	Handhole, Rebuild Existing Handhole to Heavy-Duty	278
GIG1	Inspection, Standby Generator	278
GIT1	Inspection, Thermo Graphic	283
GJ01	Junction Box and All Appurtenances, Remove	284
GJ02	Junction Box, Inline Connectors and Termination	284
GJ03–GJ04	Junction Box, Stainless Steel	285
GMR1	Median, Remove and Replace	285
GPC1	Pump, Calcium Chloride	286
GPV1	Pavement Sealcoating	286
GRB1	Radio Tower Beacon, Relamp	287
GRT1	Radio Tower, Inspection and Report	287
GSD1	Sidewalk, Remove and Replace	288
GSO1	Sodding	288
GTC1	Traffic Control	288
GTR1	Trench and Backfill with Warning Tape	289
GU01–GU03	Uniduct	289
GU04	Uniduct, Install Only	290
GV01	EMCMS	290
GV02	Operational Support	290
GWR1–GWR2	Welding Receptacle and Plug	291
LA01	Arm or Twin Arm with Luminaire, Install Only	291
LB01	Breakaway Device, T-Base	292
LBB1	Breaker, Branch 20A to 70A	293
LBB2–LBB3	Breaker, Main	294
LBT1	Buck-Boost Transformer	295
LC01	Controller, Duplex Console, with Radio	295
LC02	Controller, Duplex Console, without Radio	296
LC03	Controller, Lighting, Install Only	296
LC04	Controller, Lighting, Remove and Salvage	297
LC05	Controller, Single Door, Console, without Radio	297
LC06	Controller, Combination Lighting	298
LCL1	Clock, Digital Astronomical	298
LCN1–LCN2	Contactors	299
LD01–LD04	Decal Set, Lighting Unit	299
LDS1	Disconnect Switch	300
LE01	Electrical Outlet, GFCI Type	301
LE02	Convenience Receptacle, 120 Volts	301
LF01	Foundation, Light Pole	302
LF02	Foundation, Light Pole, Metal	302
LF03	Foundation, Light Tower, Up To 54 Inch Diameter	303
LF04	Foundation, Lighting Controller	303
LF05	Foundation, Modification for Concrete or Metal	304
LGF1	Ground Field	305
LP01	Light Pole, Kit	305
LP02	Light Pole Unit, Install Only	306
LP03	Light Pole Unit, Removal and Salvage	306
LP04	Wood Pole Unit, Install Only	307
LP05	Wood Pole Unit, Removal and Salvage	307
LPN1	Panel, Distribution	308
LS01	SCADA, Lighting, Radio Control Equipment	310
LS02	SCADA, Lighting, Radio Inspection	310
LS03	SCADA, Lighting, RTU Terminal Configuration	311
LT01–LT02	Light Tower	312
LT03	Light Tower, in Place, Clean and Paint	313
LT04	Light Tower, Remove And Re-Erect	320
LT05	Light Tower, Install Only	320

LT06	Light Tower, Lowering Device for Retrofit	321
LT07	Cable, Combination CCTV & Lighting, Install	322
LU01	Luminaire, Eight (8) FT. Fluorescent	322
LU02	Luminaire, Four (4) FT. Fluorescent	323
LU03	Luminaire, Fluorescent, High Bay	324
LU04	Luminaire, Fluorescent, for Wet Locations	325
LU05	Luminaire, HPS, for Building Roof	325
LU06	Luminaire, HPS, for Building Wall	326
LU07	Luminaire, Keeper	327
LU08	Luminaire, Navigation LED	327
LU09	Luminaire, Removal and Salvage	328
LU10	Luminaire Shield, Pole	329
LU11	Luminaire Shield, Tower	329
LU12	Luminaire, Tower, Install Only	329
LU13	Luminaire, Fluorescent, Install Only	330
LU14	Luminaire, Wall, Underpass or Tunnel, Install Only	330
LU15	Emergency/Exit Light Fixture	331
LU16	Luminaire, Metal Halide	331
LW01	Wash Hubbard's Cave Tunnel Walls	335
PA01	Alarm, Intrusion Override Key Switch	336
PC02	Coating, Concrete Surface	336
PC03	Coating, Steel Surface	337
PD01	Detection System, Fire	337
PG01	Gas Sensor, Remove and Replace	337
PI01	Inspection, Automatic Bus Transfer System	338
PI02	Inspection, Auto Transfer Switch	339
PI03	Inspection, Gas Detector System	340
PI04	Inspection, Switchgear System	341
PI05	Inspection, Motor Starter, Soft Start Type	343
PI06	Inspection, SCADA Radio Equipment	344
PI07	Inspection, SCADA Radio	345
PI08	Inspection, Backflow Preventer	345
PM01	Pump Motor Balancing	346
PRB1-PRB6	Pump Rebuild	348
PS01-PS02	PUMP, SCADA Equipment, Furnish and Install	356
PS03	Pump, Vibration Testing and Analysis	363
PV01-PV03	Vendor Budgetary Allowance	365
PW01	Wet Pit, Cleaning	366
PW02	Wet Pit, Power Wash	366
SB01	Beacon, Flashing, Low Mount, 1 Face	376
SC03	Cabinet, Type 3 for Surveillance	377
SCP1-SCP2	DMS Power Cabinet	378
SD01	Detector Loop Sensor Unit, Four Channel Digital	381
SD02	Detector Loop Sensor Unit, Two Channel Digital	383
SD03	Detector Loop Round, Square, or Rectangular	384
SD04	Blue Tooth Traffic Detector	387
SDM1	DMS Front Access, Full matrix, Color, NTCIP 1203 V2	388
SDM2	DMS Batteries (Telespot)	427
SDM3	DMS Batteries (Skyline)	427
SE01	Electric Service Upgrade and Grounding	428
SE02	Electrical Cable in Conduit, 4C/ No. 18 Shielded Loop Detector	430
SEC1	Ethernet Media Converter	432
SES1	Ethernet Managed Switch	432
SI01	Inspection, Automatic Suppression System	435
SJ01	Junction Box, Stainless Steel	435
SLP1	Lightning Protection for Communication Lines	436
SLP2	Lightning Protection for Induction Loop Detectors	436

SP01	Paint Surveillance Installation	437
SP02	Paint Traffic Signal Mounting Hardware	438
SPB1	Post Base, Traffic Signal	438
SPG1	Post, Guard	438
SPT1	Post, Traffic Signal, 1' to 3'-6"	438
SPW1	Post, Wood	439
SR01	Radar Vehicle Detector	439
SR02	Radar Vehicle Detection Station	445
SR03	Radar Vehicle Detection Hub	446
SR04	RVD Station, Upgrade and install	449
SR05	RVD Hub, Upgrade and install	449
SR06	RVD Hub/RVD Station Radio Site Survey	451
SS01	Signal Head, 1 Face	451
SS03	Signaling Load Relay, Mechanical	452
SSU1	Surge Protectors, AC Filtering	452
ST01	TELCO Suppression	452
ST02	Telecommunication Cable Inline Connectors and Termination	453
ST03	Telecommunication Cable - No. 19/3 Pair	453
ST04	Telecommunication Cable- No. 19/25 Pair	455
ST05	Telecommunication Cable, Install Only	456
STN1	Tone Power Supply	457
STN2	Tone Rack Cradle Assembly for Field	458
STN3	Tone Receiver, F.S.K.	458
STN4	Tone Transmitter, F.S.K.	459
SU01	UPS System, Inspection	461
SU02	U.P.S. System, Storage Battery, Remove and Replace	461
SV01	Vendor Budgetary Allowance for Repair Services	462
SV02	Vendor Budgetary Allowance for ATMS Maintenance/Support	462
TC01–TC02	Full Actuated Controller in Cabinet	462
TC03	Full Actuated Controller in Type IV Cabinet with RR Equipment	463
TC04	Full Actuated Controller	463
TC05–TC06	Install Existing Traffic Signal Controller or Controller and Cabinet	464
TC07	Controller Cabinet, Type IV or Type V	464
TC08	Controller and Cabinet Modification	464
TC09–TC10	Communications Control Equipment	465
TC11	Traffic Signal Master Controller	465
TC12	Install Telephone Line and Modem	465
TC13	Install Updated Prom Set at Existing Local or Master Controller	466
TC14	NEMA Conflict Monitor/ MMU with Event Logging	466
TC15	UPS System	467
TCS1	Portable Changeable Message Sign	467
TD01	Drill Existing Handhole	467
TE01–TE06 AND TEC1–TEC2	Electric Cable	467
TF01–TF06	Concrete Foundations	468
TF07	Concrete Foundation, Rebuild/Modify, Type D	468
TFB1	Flashing Beacon, Post Mount, 1 Face	469
TFB2	Flashing Beacon, Span Wire Mounted	469
TFB3	Flashing Beacon, Solar, Post Mount, 1 Face	470
TGS1	Additional Grounding and Electric Service Upgrade	470
TL01	Inductive Detector Loop	473
TL02	Detector Loop	473
TLS1	LED Illuminated Sign	474
TM01	Microwave Vehicle Sensor	475
TMA1–TMA5	Steel Mast Arm Assembly and Pole	475
TMA6	Relocate or Install Existing Mast Arm Assembly and Pole	476
TPP1	Pedestrian Push-Button Post, Galvanized Steel, Type II	476
TPP2	Pedestrian Push-Button	477

TR01	Rotate Signal Phasing at an Existing Traffic Signal Intersection	477
TR02	Re-Assign System Detectors	477
TS01	Manhole Cover and Frame Grounding Furnish and Install	478
TSD1	LED Signal Display	478
TSH1–TSH3	Incandescent Signal Head, 1 Face	478
TSH4	Signal Head Lens	479
TSH5	Pedestrian Incandescent Signal Head, 1 Face	479
TSL1–TSL8	LED Signal Head, 1 Face	479
TSL9	LED Pedestrian Signal Head, 1 Face	480
TSL10	LED Pedestrian Signal Head, Countdown, 1 Face	480
TSR1	Remove Signal Section or Head	481
TSR2	Relocate or Install Existing Signal Section or Head	481
TT01	Span Wire Traffic Signal Installation	482
TTM1	Thermoplastic Pavement Marking Line 24 Inch	482
TTP1	Traffic Signal Post, 10 FT to 18 FT	483
TTP2 - TTP3	Remove Traffic Signal Post and Remove Mast Arm Assembly and Pole	483
TTP4	Relocate or Install Existing Signal Post	483
TVD1	Video Detection System, Complete Intersection	483
TVD2	Video Detection System, Single Camera/Processor	490
TWD1	Wireless Detection System, Complete Intersection	491
TWD2	Wireless Detection System, Single Approach	493
TWI1	Wireless Interconnect System	493
TRAFFIC SIGNAL SPECIFICATIONS		494
SECTION 3 – LIST OF LOCATIONS		549
SECTION 4 - BDE SPECIAL PROVISIONS		657

DISTRICT 1 ELECTRICAL MAINTENANCE CONTRACT 60L34

ARTICLE 1.0 – BIDDERS INFORMATION AND SPECIAL PRE-QUALIFICATION SUBMITTALS

1.1 Description of Work

This Contract is for the maintenance of Traffic Signal System, Advanced Systems, Lighting, Navigation, and Sign Illumination System, Pump Station System, Surveillance and Dynamic Message System, and Extra Systems including bridge monitoring, highway advisory radio, ice beacons, maintenance yard electrical equipment, radio base stations, weigh station systems, and rest area lighting/electrical equipment. Each of these major systems consists of many subsystems and components at many locations throughout District 1.

1.2 Schedule of Prices – Submittal (for Attached Bidding Sheets)

1. The undersigned bidder submits herewith, in accordance with the rules and instructions, a schedule of prices for the items of work for which bids are sought.
2. The Contractor, for specified unit prices listed under the Schedule of Prices, shall conform to all requirements as specified herein these articles.
3. Each Pay Item shall have a unit price and a total price.
4. The unit prices bid are in U.S. dollars and cents.
5. The unit price shall govern if no total price is shown or if there is a discrepancy between the product of the unit price multiplied by the quantity.
6. If a unit price is omitted, the total price will be divided by the quantity in order to establish a unit price.
7. A bid will be declared unacceptable if neither unit price nor a total price is shown.
8. The Department is under no obligation to authorize non-routine pay item work. Non-routine work will be authorized based on preventative maintenance assessments, ongoing operational needs and system inspections.
9. The quantities appearing in the bid schedule are approximate and are provided for the purpose of obtaining a gross sum for the comparison of bids.
10. Payment to the Contractor awarded the Contract will be made only for actual quantities of work performed and accepted or materials furnished according to the Contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted.

The Contractor's unit prices are expected to be realistic and no additional compensation will be allowed due to a variance in quantities; however, the Engineer retains the right to seek a revised unit price when quantities exceed Department expected usage.

The Engineer also retains the right to use force account procedures or use other procurement means available to the Department where unit prices reflect pricing significantly higher than Department projected norms. The Contractor is cautioned against unbalanced bidding and is directed to Article 102.01 of the Standard Specifications.

1.3 Examination of Plans, Specifications, Special Provisions, and Site of Work

The prospective bidder shall, before submitting his bid, carefully examine the proposal form, plans, specifications, special provisions and form of contract and bond. All locations to be maintained under this Contract may be inspected in order for the prospective bidder to become

familiar with all the local conditions affecting the Contract and the detailed requirements of maintenance.

The prospective bidder shall be responsible for any pre-existing maintenance deficiencies that may exist at the time this contract is awarded and his bid shall reflect these deficiencies. If this bid is accepted, he will be responsible for all errors in his proposal resulting from his failure or neglect to comply with these instructions. The Department will, in no case, be responsible for any change in anticipated profits resulting from such failure or neglect.

Numerous figures, charts, forms, or required contractor submittals, as mentioned herein, shall be furnished to all bidders at the Pre-Bid meeting.

1.4 Proposal Guaranty

Each proposal shall be accompanied by either a bid bond on the Department form, executed by a corporate surety company, satisfactory to the Department, or a bank cashier's check or a properly certified check for Three Hundred Thousand Dollars (\$300,000) made payable to the Treasurer, State of Illinois. The proposal guaranty checks will be returned as prescribed in Section 103.03 of the Standard Specifications. Bid bonds will not be returned.

1.5 Requirement of Contract Bond

The successful bidder, at the time of execution of the Contract, shall deposit with the Department a surety bond in the amount of four million dollars (\$4,000,000). The form of the bond shall be acceptable to the Department.

1.6 Insurance

The Contractor shall comply with the provisions of Section 107 of the Standard Specifications for Road and Bridge Construction, legal relations and responsibility to public. Insurance shall be in compliance with the requirements of Article 107.27 except for liability minimum amounts as modified herein.

The Contractor's insurance shall be written for not less than limits of liability as follows:

- A. Employers Liability
 - (1) Each Accident \$12,500,000
- B. Commercial General Liability
 - (1) General Aggregate Limit \$12,500,000
 - (2) Products-Completed Operations Aggregate Limit \$12,500,000
 - (3) Each Occurrence Limit \$12,500,000
- C. Commercial Automobile Liability
 - Bodily Injury & Property Damage Liability Limit Each Occurrence \$ 12,500,000
- D. Umbrella Liability
 - Refer to Art.107.27

The Chicago Transit Authority and the Illinois Department of Transportation shall be named as additional insured's and furnished with certificates of insurance and a full copy the insurance policy.

The customary exclusion that negates coverage when working within 50 feet of a railroad track shall be eliminated from the Liability policy and the certificates submitted shall plainly state that coverage extends to work being done on or over track right-of-way. The Contractor shall carry a railroad protective insurance policy for the purpose of maintaining traffic signal facilities and appurtenances on railroad right-of-way (R.O.W.). The policy shall cover the Contractor's crews performing normal routine maintenance on traffic signal heads and other traffic signal related items attached directly to the railroad's truss or structure containing the railroad's warning devices. (This coverage is required for all existing locations with traffic signal heads attached directly to railroad structures, or with existing railroad interconnects.)

The Contractor shall obtain railroad protective liability insurance coverage, to perform non-routine work relating to the installation of new traffic signal facilities on railroad R.O.W. where the Department has no existing appurtenances, e.g., railroad interconnect, railroad structure mounted traffic devices, etc.

The Contractor shall provide insurance coverage for all State Stock Inventory in the possession of the Contractor or in the State Stock Warehouse, for losses due to fire, theft or vandalism. Estimated value of current stock on hand is approximately \$500,000.

The Contractor shall provide full insurance coverage as described in the above items until all routine and authorized non-routine work has been completed in accordance with the terms of this Contract.

The Contractor shall submit original and duplicate copies of all insurance policies when requested by the Engineer. The complete policies, with all riders, etc., shall be submitted.

1.7 Indemnification

The Contractor shall abide to the requirements of 107.26 Indemnification, per the Standard Specifications for Road and Bridge Construction.

1.8 Qualifications to Bid

It is the intent of this Contract that it be performed only by a contractor having the size, special expertise and organizational capabilities necessary to accomplish its wide-ranging scope of work. The prospective bidder should familiarize himself with all aspects of the Contract prior to bidding.

All bidders must be pre-approved, by the IDOT Central Bureau of Operations, prior to bidding upon the District 1 Electrical Maintenance Contract. In addition, a Special Qualification submittal is required of all bidders at the mandatory Pre-Bid Meeting.

1.9 Mandatory Pre-Bid Meeting

A mandatory pre-bid meeting will be conducted to allow bidders the opportunity to submit, for Department review, a typed list of questions, and the Special Qualification Submittal. The Department will review the bidders' questions, but is under no obligation to address such questions in an addendum. Minutes of the pre-bid meeting will not be issued to attendees. An addendum may be issued prior to the letting to clarify contract language as necessary. Bidders should watch the Illinois Department of Transportation web site for bidding announcements.

The Pre-Bid Meeting will be held at 10:30AM, Wednesday, August 25, 2010

Illinois Department of Transportation
Materials Lab Training Room
101 West Center Court
Schaumburg, IL 60196-1096

The Pre-Bid Meeting attendance is mandatory for all prospective bidders.

1.10 Bidders' Special Qualifications Submittal

All prospective bidders shall provide a bidders' Special Qualifications Submittal; the requested information as listed in points 1 through 11, as applicable to Contract article specifications herein. If the bidder Special Qualifications submittal, as presented to the Engineer, does not meet Contract 60L34 requirements as listed herein, the bidder will not be qualified to bid on the EMC 2011/2012.

1. Name of the bidding company and its owners and/or officers
2. Resumes of the proposed:
 - Project Manager
 - Administration Manager
 - Advanced Systems Manager
 - Lighting and Extra Systems Manager
 - Pump Station Manager
 - Traffic Signal Manager
 - Advanced Systems Specialist
 - Pump Station Specialist
 - SCADA Specialist
 - SCADA Trainee
 - Surveillance Specialist
 - Traffic Signal Specialist
3. Location and description, including square footage, of:
 - Bidder's Current Headquarters
 - Proposed EMC Office
 - Proposed EMC Dispatch Center
 - Proposed Shop Facilities
4. A description of the plans for service work, or in-house test facilities which the bidder would use, to overhaul and benchtest all electromechanical, solid state, microprocessor and analog and digital control equipment. (Section 1, Article 3.6.4)
5. A 24/7 chart of the bidder's proposed staffing for the EMC Dispatch Center, which shows number of personnel working and on-call each day, by the hour (Section 1, Article 3.10.4)
6. A report which provides the number of vehicles in use in the bidder's current operations, and the number of any additional vehicles to be purchased or leased to meet the requirements of the EMC 2011/2012. (Section 1, Article 3.15)
7. A report which summarizes the number and types of maintenance/construction equipment currently owned or leased by the bidder. (Section 1, Article 3.16)
8. A report which details the bidder's in-house familiarity and capability in installing and maintaining CCTV systems. (Section 1, Article 6.0)
9. A report which describes the bidder's in-house familiarity with Allen-Bradley PLC equipment and troubleshooting of ladder logic used in the REVLAC and RACS systems. (Section 1, Article 6.0)
10. A report which describes the bidder's in-house work on fiber optic systems. (Section 1, Article 6.0)
11. A statement signed by the bidder that:

- He/she has read the EMC 2011/2012 and accepts the methods of payment for work as described herein
- The Special Qualification information submitted is accurate and truthful

The Special Bidder's Qualifications Submittal must be presented to:

Mr. Naser Gholeh, P.E., Resident Engineer
Illinois Department of Transportation
Material Lab Building
Bureau of Traffic, Electrical Maintenance Operations
101 West Center Court
Schaumburg, IL 60196-1096

By the conclusion of the mandatory Pre-Bid Meeting

Bidders will be furnished with a receipt which states that the Special Bidder Qualifications submittal was received within the required time deadline. The submitted information will be analyzed and, if requested by the Engineer, the prospective bidder shall facilitate an inspection of its facilities and/or equipment. The Engineer shall determine the aggregate suitability and acceptability of the qualification information submitted. If it is determined that the prospective bidder is qualified to perform the work then the Department will notify the bidder through the Illinois Department of Transportation website stating they are approved to bid on the Electrical Maintenance Contract 60L34.

1.11 Site Inspections

Pre-Bid Site Inspection locations, itinerary and program schedules will be finalized and distributed at the Pre-Bid Meeting. Bidders are expected to be familiar with the type and extent of systems covered under the Contract. Certain items will be made available for detailed inspection during the Pre-Bid Site Inspection. Bidders are encouraged to request inspection items at the Pre-Bid Meeting. The Department reserves the right to limit the inspections.

ARTICLE 2.0 – Description of Work

Annual electrical Maintenance of Traffic Signal, Lighting System, Advanced Systems, Pump Station System, Surveillance and Other Electrical Systems located within the District.

ARTICLE 3.0 -- GENERAL CONTRACT REQUIREMENTS

3.1 BASIC CONTRACT PROVISIONS

Unless noted herein, all requirements as listed in Article 3.0 General Requirements shall be paid through, are part of, and are included in routine maintenance. The dedicated and assigned personnel as described herein, and the equipment and material to perform all routine and non-routine maintenance are a minimum requirement of this Contract. The Contractor shall provide additional labor, equipment and material based on the need to meet specific Contract requirements. Delays in response, repair completions, routine maintenance and/or preventive work and inspections thereof will not be accepted and will result in liquidated damages and cancellation of this Contract as specified in Article 3.1.4. It is also the Contractor's responsibility to assure Contract compliance with all systems requirements listed herein.

Once the Contract is executed and the pre-construction submittals have been approved, the Contractor shall begin preparations to assume routine and non-routine maintenance responsibilities as specified and shall perform work as required and as directed by the Engineer. Certain preparatory work, such as transfer of state stock inventory, purchase of materials for routine equipment repairs as specified herein, as arranged with the Engineer, can be completed in advance of the start of the Contract. The Contractor must be prepared to service and maintain all electrical systems as specified in this Contract starting January 1, 2011. The Contractor shall coordinate access to perform maintenance and continued operation of IDOT equipment and systems.

3.1.1 TERM OF CONTRACT

The Contract shall be valid for operations from 12:00 a.m. on January 1, 2011 to 12:00 a.m. (midnight) on December 31, 2011, subject to cancellation provisions specified herein. However the Contract shall remain in force, even following the completion of routine maintenance response requirements, for the purpose of completing Contract Obligations until 12:00 a.m. (midnight) on December 31, 2012. All routine and non-routine contract work shall be completed by that date.

The Contractor shall comply with authorized work completion dates; however, any authorized non-routine work which has not yet been started, due to circumstances such as delays in issuance of permits by outside agencies, will be cancelled. If the Contract is renewed, the Department shall make the effort, if circumstances allow, to re-authorize in the renewal term, any work items cancelled from the prior contract term.

Work on the Advanced System shall be coordinated as necessary with the Advanced Systems Maintenance Contract 60I28 contractor (routine work ending March 31, 2011 and finish up of non-routine work by December 31, 2011). All locations under Routine Maintenance Pay Item A-1 and A-2 and locations under Pay Item A-3a will be maintained by another contractor from January 1, 2011 until April 1, 2011. Refer herein to Article 6.0 Advanced Systems.

3.1.2 RENEWAL

The Department has the sole discretion to renew this contract for one (1) additional term. This option would extend the Contract for one additional term from 12:00 a.m. January 1, 2012, to 12:00 a.m. (midnight) December 31, 2012, per all revisions or amendments as defined. If renewed, the Contract shall remain in force, even following the completion of routine maintenance response requirements until 12:00 a.m. (midnight) on December 31, 2013. All routine and non-routine contract work shall be completed by that date. The Contractor shall comply with authorized work completion dates; however, any authorized non-routine work which has not yet been started, due to circumstances such as delays in issuance of permits by outside agencies, will be cancelled.

The Contractor shall accept the renewal of the Contract if offered by the Department. Upon notification of the contract renewal by IDOT, the Contractor shall complete and submit IDOT's contract renewal form within fifteen (15) days of notification, together with documentation of the contract bond extension and copies of the required insurance policies for the renewal year as well as any other documentation required by the Department.

The original contract term and the renewal term shall be considered independent with respect to completion of work, payment, and withholding of payment as well as all associated work documentation.

No later than one month prior to the start of the renewal year, the Contractor shall provide the Department the following for approval:

- Written Acknowledgement of the renewal acceptance
- Documentation of the contract bond extension
- Copies of required insurance policies covering the renewal year
- Submittal of contract vehicle assignments, vehicle models and current mileage
Submittal of new vehicle purchase invoices or leases (necessary to meet yearly mileage limits)
- Requests for Sub-Contractor Approval, form BC260-A for each desired sub-contractor to be utilized in the renewal year
- A new Disadvantaged Business Utilization Plan for the renewal year on Department forms SBE 2026, and DBE Participation Commitment Statement on Department forms SBE 2025 (which must be approved by the Department prior to the start of the renewal year work)
- Submittals for any new equipment or materials not submitted and approved in the prior contract term, but anticipated for use in the renewal year

3.1.3 COMPLETION OF ANNUAL WORK

The Department shall authorize all work by the end of the Contract term and the Contractor is expected to complete said work by the agreed due date. If the one year renewal provision is exercised by the State, the renewal shall not relieve the Contractor from the requirements to complete work from the first year in a timely fashion. The existence of a backlog from a prior year shall not be a justification for delay of work in the renewal year. Incomplete routine or non-routine work without an approved delayed completion date may cause the application of liquidated damages or retainage of the routine maintenance payment.

The Engineer may apply a withholding of up to 75% of the December, 2011 routine maintenance payment (or December, 2012 if this Contract is renewed) until all authorized routine and non-routine maintenance work is complete, but may progressively release portions of the retainage as the incomplete work is reduced. Key items for completion of work under a calendar year (or term) include:

- All routine work complete, approved, with all documentation
- All workforce analysis reports submitted and accepted
- All DBE/EEO submittals complete and accepted/approved

3.1.4 DE-AUTHORIZATION AND/OR CANCELLATION OF WORK

Work which may not be completed by December 31, 2012 (or December 31, 2013 if this contract is renewed), due to circumstances beyond the control of the Contractor such as major weather events, delays in issuance of permits by outside agencies, etc., shall be de-authorized. The Contractor shall be entitled to receive payment for services and work performed and materials installed under the terms of the Contract prior to the effective date of de-authorization, but shall not be entitled to receive any damages on account of such de-authorization or any further payment whatsoever.

Only the Department may cancel the contract. The Contractor shall be given 30 days advance notice of cancellation of this Contract. In the event of cancellation, the Contractor shall be entitled to receive payment for services and work performed and materials or equipment furnished under the terms of the Contract prior to the effective date of cancellation, but shall not be entitled to receive any damages on account of such cancellation or any further payment whatsoever. There shall be no payment for incomplete work.

The Department may take possession of the incomplete work and all materials, associated special tools and appliances for any reason which the Engineer deems to be in the public interest, and this decision shall be final. Upon the receipt of a notice of cancellation, the Contractor shall provide the Engineer with a list of all State Stock inventory in his possession as of that date.

3.2 SUBCONTRACTING OF WORK

3.2.1 GENERAL REQUIREMENTS

The Contractor shall obtain approval from the Engineer for employment of all subcontractors performing work on this Contract, prior to the commencement of work. Except as modified herein, subcontracting of the contract work shall be in conformance with the requirements of the Standard Specifications and Supplements and Recurring Special Provisions.

The Contractor shall submit to the Engineer, prior to the start of work, and at the Pre-Construction Meeting:

- A request for Approval of Subcontractor, form BC260A for each subcontractor to be employed for work under this Contract
- A certification stating that the required Federal and State provisions will be inserted in the final contract with the subcontractor. Inclusion of the required contract provisions will be monitored by the Bureau of Small Business Enterprises, as part of its compliance review.
- A written subcontract agreement for each proposed subcontractor which sets forth the scope of services to be subcontracted, the lump sum or unit price for such services and the signatures of the subcontracting parties
- A copy of the Disadvantaged Business Utilization Plan on Department forms SBE 2026, and DBE Participation Commitment Statement on Department forms SBE 2025, all required EEO submittals.

3.2.2 SUBCONTRACTING LIMITATIONS

In addition to the limitations imposed by the Standard Specifications, there shall not be wholesale subcontracting of the herein defined electrical systems. The Contractor shall perform not less than 51% of the maintenance of each electrical system with his own forces. Except for subcontracting of one or two patrol routes, as may be approved by the Engineer, in the fulfillment of DBE or minority participation requirements, work that depends on a dispersed workforce and timely response activities shall not be subcontracted. Moreover, there shall be no geographically-based subcontracting of the work, e.g., by north Cook or by south Cook, etc. Furthermore, the Contractor's daily management and supervision for each system, all administrative functions and dispatching, shall be done with his own forces.

Work, which is subcontracted, shall not include work which is in turn subcontracted to an additional party. Subcontracted work shall be limited to work performed by the subcontractors' own forces.

3.2.3 SUBCONTRACTOR BILLING

For non-routine agreed price work (not pay items) performed by an approved subcontractor as named on the authorization for work and on the contractor invoice, in accordance with Article 109.04 (b)(7) of the Standard Specifications for Road and Bridge Construction, when work is performed by an approved subcontractor, the Contractor shall be allowed administrative costs of an amount equal to five (5) percent of the total approved costs on a individual work authorization, with the minimum being \$100.

Specialty service work as authorized and originated by the Department shall be considered as work by the Contractor, and not subcontracted work for purposes of billing.

3.3 CONTRACT START-UP

3.3.1 BASIC REQUIREMENTS

It is the obligation of the Contractor to make every effort to provide a smooth transition from the prior contract to this contract. This may involve adjustments in ongoing operations to adjust to revised contract provisions or it may involve a startup of operations and the assumption of maintenance responsibility if there is a change in Contractor. In either case, full professional cooperation by the Contractor is expected by the Department to assure that the District's electrical systems remain continuously monitored and maintained.

The Contractor shall assure the Department that at 12:01 a.m. on January 1, 2011 the maintenance transfer is complete and transparent to the public, that the District's electrical systems remain continuously monitored and maintained. It shall be recognized that the transfer and transition from one contract to the next will not be instantaneous with regard to all aspects of all systems.

3.3.2 ELECTRICAL SYSTEMS SURVEY

Following the award of the Contract the Contractor may submit to the Engineer a schedule for inspections of all electrical systems to determine any outstanding maintenance issues. The inspections shall be completed by December 1, 2010. The Contractor shall submit all outstanding items to the Engineer within 72 hours of the inspection.

3.3.3 STATE STOCK TRANSFER

During the last half of December, 2010 the Contractor shall prepare facility storage areas as specified herein for delivery of miscellaneous state stock not stored in the state stock warehouse. The Engineer shall provide the Contractor a list of the state stock prior to delivery.

3.3.4 CONTRACTOR OWNED SPARE PARTS PROCUREMENT

After execution of the Contract, the Contractor shall procure the spare parts as necessary for system equipment as listed in Article 4.0 such that at the time routine maintenance activities begin, adequate spare parts, as approved by the Engineer, are on hand.

3.3.5 LOCKS AND KEYS

At the Pre-Construction Meeting the Engineer shall provide the Contractor a list of equipment; doors, cabinets, hatches, gates, and other items within the electrical systems, which will need to have locks replaced or modified by January 31, 2011. Refer to System Articles, herein, for quantities required. The padlock shall meet the specifications of the weather resistant padlock as specified by the Engineer, equal or better than Master Lock 6125KA. The key number shall be approved by the Engineer prior to the purchase/install. If the equipment is currently locked with a Master Lock 6125KA model the Contractor may replace the cylinder and new key (for Master Lock 6125KA) instead of replacing the entire lock.

Selected locations of the Eisenhower (I-290) Expressway have a special anti-theft locking device on handhole covers and junction boxes at power centers to prevent cable theft. It is the Contractor's responsibility to monitor the special coded, keyed nut drivers required for these junction boxes. If a coded key is lost, it shall be the Contractor's responsibility to furnish and replace a new coded fastener nut at all locations with these anti-theft locking devices, and replace the coded, keyed nut drivers, all at the Contractor's expense.

Ramp gate locks will not be replaced and the Department will furnish ramp gate keys to the Contractor. The Contractor will keep a key assignment list by name and it shall be emailed to the Engineer whenever updated. Keys shall be turned over at the end of the contract.

3.4 END OF CONTRACT TRANSITION

It is the obligation of the Contractor to cooperate fully to facilitate the transition period work from this contract to any subsequent contract, providing prompt communications, timely completion of authorized work, and other transfers as noted herein.

3.4.1 STATE STOCK INVENTORY RETURN

The Contractor shall provide the Engineer on December 1, 2011 (or December 1, 2012 if this contract is renewed) a list of all state stock inventory and its applicable location that is in his possession on that day. All state stock inventory and/or other equipment or materials owned by IDOT in the possession of the Contractor shall be moved to state owned locations or locations as designated by the Engineer, by a date to be specified by the Engineer (during December 2011 or December 2012). The Contractor shall use his own spare parts for contract work for the remaining days of the term of the Contract. The Contractor shall replace missing stock in kind due to loss, theft, burglary, or damage caused by his workforce.

3.4.2 LOCK AND KEY TURNOVER

At the end of the Contract term(s) the Contractor shall make arrangements to submit to the Engineer all keys to IDOT System equipment, including alarm keys and keys to traffic signal cabinets, railroad cabinets, lighting cabinets, high mast towers, pump station gates, doors and hatches, base station fences and doors, navigational lighting equipment (including I-55 & Harlem Avenue bridge) and IDOT ramp keys, on a date as specified by the Engineer. All existing, replacement and/or new locks added to the electrical systems during the Contract become the property of the Department.

The special coded, keyed nut drivers required for the I-290 junction boxes must be returned to the Engineer. If a coded key is lost, it shall be the Contractor's responsibility to furnish and replace a new coded fastener nut at all locations with these anti-theft locking devices, and replace the coded, keyed nut drivers, all at the Contractor's expense.

3.4.3 EMCMS CONTINUITY

The Contractor shall contract with an applicable subcontractor, as approved by the Engineer, to provide programming support and equipment in order to continue to perform certain specified functions on the EMCMS seamlessly without interruptions until all work, both routine and non-routine is complete, per Contract term requirements. These necessary functions include the data query of location maintainer and owner information, completion of work repair Tickets, accounting of state stock, invoicing of routine and non-routine work, and providing Motorist Caused Highway Damage logs, statements and invoices.

3.5 CONTRACTOR PERFORMANCE

3.5.1 PRIORITY OF WORK

For the Contractor's forces employed on this Contract, the work on this Contract shall take precedence over work performed for others, including other government agencies, except as expressly permitted by the Engineer or specified herein. This requirement applies to work activities on a daily basis. The Engineer reserves the authority to re-direct the Contractor's work priorities in response to emergency situations, potential hazards, contract coordination and incomplete or deficient work and the Contractor will be allowed no additional compensation for priorities so redirected.

3.5.2 SUSPENSION OF WORK

If in the option of the Engineer any work performed on this Contract may seriously jeopardize the welfare of the general motoring public, the Engineer has the authority to order the immediate suspension of the work task. Depending on the offense, the Engineer may withhold all or a portion of the monthly routine maintenance payment due to the Contractor, and/or assess liquidated damages.

3.5.3 UNSATISFACTORY SERVICE

Failure to perform all functions in the manner specified herein or in the Standard Specifications, and within any time limit specified, or should the Contractor refuse or fail to perform the work or any separable part thereof promptly and in the manner specified in this Contract with such diligence as will insure its satisfactory completion, the Engineer will advise the Contractor via written transmittal regarding the nature of unsatisfactory service. The Contractor shall take necessary action to correct the items listed and shall respond back to the Engineer within five (5) working days from the time of receipt of the report, explaining the reasons for the improper service and the expected date of the resolution of the listed problems.

If after two (2) written warnings that a work item (routine or non-routine) is not in Contract compliance or work has not been completed per the agreed time frame, the Engineer will take additional remedial action such as withholding of all or a portion of the monthly routine maintenance payment due to the Contractor, assessing liquidated damages, or both.

If the Contractor cannot perform the work per contract specifications, it will be the Engineer's option to require the Contractor pay another contractor, (as approved by the Engineer) for the corrective work, the actual time and materials cost of which shall be deducted from the Contractor monthly routine maintenance payment as liquidated damages.

3.5.4 WITHHOLDING AND RELEASE OF FUNDS

The Engineer may withhold up to 100% of the total monthly routine maintenance payment for all systems for non-compliance of the Contract; the incomplete or otherwise unsatisfactory performance on any system, including but not limited to failure to respond to reported incidents in a timely manner, perform maintenance in compliance of contract requirements, complete work per the agreed time frame, or document dispatch or response work activities in the time and/or manner as specified in articles herein.

After the previously uncompleted or deficient work has been subsequently completed to the satisfaction of the Engineer, the Contractor shall advise the Engineer in writing, requesting the release of funds previously withheld. The Engineer shall approve the release of funds previously withheld from the Contractor through an authorization letter.

3.5.5 LIQUIDATED DAMAGES

The Engineer may assess liquidated damages, to be deducted from the Contractor monthly routine maintenance payment, for any items not in compliance of the Contract, unless the Contractor can demonstrate to the satisfaction of the Engineer, that his/her efforts were deterred by the Department, or by other contractors employed by the Department or by unforeseeable causes beyond his control and without the fault or negligence of the Contractor.

It shall be the decision of the Engineer whether the liquidated damages per day or one time charge will be assessed as follows:

Liquidated Damage Assessment

PER DAY	PER INCIDENT	PER CONTRACT SPECIFICATIONS:
NA	\$ 1,000.00	FAILURE TO RESPOND, PER TICKET OR PER ENGINEER DIRECTION
\$ 200.00	\$ 500.00	FAILURE TO RESPOND PER TIME SPECIFICATIONS (refer to System Articles herein)
\$ 200.00	\$ 500.00	FAILURE TO PROVIDE TIMELY ROUTINE REPAIRS AND/OR MEET NON-ROUTINE WORK DUE DATES
\$ 200.00	\$ 1,000.00	FAILURE TO PROVIDE DOCUMENTATION (AUTHORIZATIONS, TICKET INFORMATION, REPORTS, SUBMITTALS FOR ROUTINE OR NON-ROUTINE WORK)
\$ 200.00	\$ 500.00	FAILURE TO SUPPLY REPLACEMENT PARTS
\$ 200.00	\$ 500.00	FAILURE TO PROVIDE PROPER SERVICE
\$ 200.00	\$ 500.00	FAILURE TO FOLLOW SPECIFIED PROCEDURES
\$ 200.00	\$ 500.00	FAILURE TO PROVIDE PROPER STAFFING
\$ 200.00	\$ 500.00	IMPROPER USE OF MATERIALS OR METHODS
\$ 500.00	\$ 1,000.00	FAILURE TO REPLACE STATE STOCK
\$ 500.00	\$ 3,000.00	FAILURE TO RETURN STATE STOCK AT END OF CONTRACT

3.6 CONTRACTOR FACILITY REQUIREMENTS

3.6.1 GENERAL REQUIREMENTS

At the time of bidding the Contractor shall have an established business presence in the District to assure the timeliness of the assumption of the contract work on the first day of the Contract.

The Contractor shall have and maintain in District 1 adequate facilities at all times for the timely completion of work under this contract. These facilities shall include an EMC Office and 24-hour Dispatch Center and other permanent facilities, which may be strategically located, geographically, to support the Contractor's work force. The size and type of facility may vary depending on the location, type, and quantity of electrical equipment to be serviced within that area.

All Contractor's facilities shall be complete and ready for operation no later than December 17, 2010, ready for a demonstration inspection by the Engineer, except that dial-up phone numbers which are transferred from the outgoing contractor need not be established by the Contractor until a mutually acceptable date is arranged with the Engineer.

3.6.2 EMC OFFICE

The Contractor shall establish, for the duration of this Contract, a contractor's office in-District, (in the six county area covered by this Contract) for management of all contractor work under this Contract. This EMC office may be a satellite office remote from the Contractor's headquarters or it may be a singular and clearly-defined section within the Contractor's in-District headquarters. In order to facilitate communication and shared interest in contract matters, the contract management and technical/administrative functions as defined herein and represented in the Contractor's organization chart shall not be dispersed throughout various areas of the Contractor's operations but shall be established here as an identifiable group with dedicated physical space. One desk shall be dedicated for use by IDOT personnel when they are in the office and this space shall have a chair, working telephone, EMCMS terminal, and file cabinet with padlock, approved by the Engineer.

3.6.3 EMC DISPATCH CENTER

Unless another location is approved by the Engineer, the Contractor's in-District headquarters or in-District EMC office shall include the 24/7 hour operations of the EMC Dispatch Center, which may be used for other Contractor dispatch functions, but shall be adequately equipped and staffed to service the EMC on a first-priority basis. (The dispatching function cannot be sub-contracted, and voice-mail or answering services will not be accepted.)

The EMC Dispatch Center shall contain a minimum of four (4) desks and chairs for dispatch personnel, shall be equipped by the Contractor with adequate lighting, voice and data communications lines and equipment necessary to perform contract monitoring functions, system alarms, and the like, including, but not limited to equipment for the emergency call-out database, the EMCMS, the lighting system SCADA, the dial-up pump station alarm system (AEGIS), and the pump station SCADA telemetry system, and the CLMS for traffic signal alarms for all brands of signal systems in use throughout the contract.

The space shall be suitably equipped to protect system electronic equipment. The designated space shall have a HVAC system, air cleaner, emergency lighting, fire detection and smoke detection system. An on-line (true) UPS system is required to provide clean power and back-up electrical power for all dispatch electronic equipment for a minimum of eight (8) hours.

A back-up communications system shall also be in place for emergency back-up communications provisions for a minimum of eight (8) hours. Proper rack(s) for all computer equipment shall be furnished, which shall be a minimum of eighteen (18) inches above floor level. The space shall be kept at a temperature optimum for proper performance of the required electronic equipment, and free of dust and/or other contaminants.

3.6.4 EQUIPMENT SERVICE SHOP

Unless another location is approved by the Engineer, the headquarters shall incorporate facilities for the testing and repair of traffic signal controllers, lighting controllers, luminaires, pump controls, DMS equipment, surveillance equipment, and similar equipment maintained under this contract. These facilities shall be adequately equipped with instruments, test rigs and the tools necessary for the work.

The traffic signal portion of the facility shall be able to handle a minimum of, but not limited to, 600 controller and auxiliary failures a year, which includes electrical-mechanical, solid-state analog, solid state digital, and microprocessor equipment.

Typical testing facilities should include a minimum of five (5) work stations consisting of printers and computers of sufficient operating capacity, to troubleshoot system equipment (masters, local, telemetry modules and modems) and monitor, on a daily basis, the closed loop traffic control system.

3.6.5 STORAGE FACILITIES

State Stock Warehouse

To facilitate security, inventory control, physical separation of state owned materials from Contractor materials, and to reduce costs of material transfers when there is a change of Contractor, most state stock inventory is currently housed at a commercial bonded warehouse at Combined Warehouse Co., 5000 South Central, Chicago, Illinois, 60638 (hereafter referred to as the state stock warehouse).

The state stock warehouse shall be centrally located to the District's major concentration of systems, and located within the boundaries of Devon Avenue on the north, 63rd Street on the south, Cicero Avenue on the east, and I-355 on the west.

The Contractor shall obtain a minimum of 10,000 square feet of rental storage space at the state stock warehouse. The storage arrangements must also include 7 day, 24 hour security, an hourly rate for necessary on-site equipment and labor to access any stored item, all warehouse material handling fees, and a mechanism for formal check-in and checkout of materials. The inventory management shall include computerized record keeping of all inventory and all transactions, including regular monthly reports and occasional reports, on demand by the Engineer. All costs for the state stock warehouse shall be included in routine maintenance.

If the Engineer requests additional state stock warehouse storage space, the Contractor shall be reimbursed through non-routine maintenance at the same rate per sq. ft. as the approved state stock warehouse costs.

Any change in the designation of the state stock warehouse, or facility requirements, shall require approval of the Engineer. The Contractor shall have the option of retaining storage at the existing state stock warehouse or providing an alternate commercial bonded warehouse which is suitable for storage of materials of the type used for the District's electrical maintenance, and meets the space and facility requirements of the current state stock warehouse. All costs associated with any transfer of state stock inventory from the existing state stock warehouse to an approved alternate warehouse shall be borne by the Contractor, and no additional compensation will be allowed.

Contractor Storage Facilities

The Contractor shall have and furnish sufficient and adequate types of material storage areas, stock room space and shelving to house materials and equipment for use on this Contract. Equipment and parts to be used on system equipment including controllers and traffic signal heads and anything which comes boxed or which could deteriorate or be damaged by exposure to the weather shall be stored indoors. The Contractor shall obtain Engineer approval for all state stock to be stored other than in the State Stock Warehouse.

All state stock inventory shall be clearly identified and physically separated from the storage of Contractor-owned materials and equipment. State stock shall be kept screened or fenced, with locked access.

Insurance and Inspections

The Contractor shall provide insurance coverage for all state stock inventory in the possession of the Contractor or in the state stock warehouse, for losses due to fire, theft or vandalism. Estimated value of current stock on hand is approximately \$500,000.

The Contractor shall comply with the instructions given by the Engineer relating to the care, storage, and marking of state stock inventory for identification purposes. The Engineer shall be allowed access to inspect state stock inventory at the Contractor's designated sites or the official state stock warehouse at any time.

3.7 CONTRACT ADMINISTRATION AND CORRESPONDENCE

3.7.1 DAILY CONTRACT ADMINISTRATION

The EMC will be administered by the IDOT District 1 Bureau of Traffic Operations. The Resident Engineer, Mr. Naser Gholeh, will be responsible for the control of the work. The Contractor Project Manager shall communicate with the IDOT Resident Engineer on all formal contract matters. Contractor Supervisors and Administrative personnel shall normally communicate with the IDOT System Engineers and Technicians.

The Contractor shall address all matters of Contract interpretation or dispute at the lowest possible level. Issues which are not addressed to the Contractor's satisfaction at the Engineer/Technician level may be raised first to the IDOT Resident Engineer level and if not resolved may be raised to the level of Bureau Chief of Traffic Operations, Mr. Steve Travia.

It is of utmost importance that the Contract Project Manager conveys to the IDOT Resident Engineer any concerns regarding work authorizations received from the Department. Whether it is routine or non-routine maintenance work, if the Contractor has questions about the location of the work, the work completion dates, quantities of estimated materials, etc., these concerns must be voiced immediately upon the receipt of the project, so the work may start as soon as possible.

3.7.2 FORMAL CORRESPONDENCE

All formal correspondence to IDOT regarding contractual matters shall only be submitted by the Principal or Project Manager and shall be addressed as follows:

Ms. Diane O'Keefe, P.E., District Engineer
Illinois Department of Transportation, District 1
Attn: Mr. Stephen M. Travia, P.E.
Bureau Chief of Traffic Operations
201 W. Center Court
Schaumburg, Illinois 60196-1096

cc: Mr. Naser M. Gholeh, P.E. Resident Engineer

3.7.3 INFORMAL CORRESPONDENCE

Informal correspondence related to day-to-day maintenance matters shall be made by means of email where possible, or fax, and may be made directly to the parties involved. The Contractor Project Manager, all System Managers, EMC Working Foremen, EMC Specialists, EMC Administrative Manager and assistant, EMC Dispatch Supervisor, and other personnel as requested by the Engineer shall have an email address and access to scan email documents to the Department. The email service used by the Contractor shall not be a service that attaches advertising to email. The Contractor shall also have and maintain plain paper facsimile (fax) equipment at the headquarters, EMC Office, and EMC Dispatch Center, for the purpose of rapid dissemination of written information not in email form.

The Project Manager shall communicate with the Resident Engineer on all contract matters. System Managers and administrative personnel shall normally communicate with the IDOT System Engineers and Technicians.

3.7.4 WORK STATUS MEETINGS

Work status meetings may be requested by the Engineer or the Contractor. These meetings shall normally be held once per month, but may be held weekly if necessary. The Contractor Project Manager, Systems Managers, Specialists, Working Foremen, or other personnel, as requested by the Engineer, shall attend work status meetings, when requested by the Engineer.

3.7.5 MONTHLY PAY MEETING

Beginning in February 2011, pay meetings shall be scheduled monthly by the Engineer, on the second Wednesday of the month at IDOT District 1 Schaumburg. The Project Manager and other Contractor personnel, as requested by the Engineer, shall meet with Department personnel to present the Routine Maintenance invoice for payment. The Contractor shall provide a brief overview of routine and non-routine work status, as well as a written report on the DBE goal progress. Work planned for the future months and ticket response/repairs may also be discussed. The Contractor shall be provided with a ticket summary for the past month.

3.8 CONTRACT PERSONNEL

3.8.1 GENERAL RESPONSIBILITIES

The Contractor shall at all times provide a force of qualified personnel, approved by the Engineer, sufficient in number to simultaneously perform the routine maintenance work, non-routine work and any specialized work operations required and described herein, and/or emergency operations at all times of the day and night. The Contractor shall meet all response and repair requirements including work schedules.

All personnel working on IDOT systems and equipment shall have the proper training associated with their working environment, and shall use safety practices in accordance with OSHA rules and regulations such as those associated with confined space, fall protection, and lock-out-tag-out.

Except as otherwise restricted, the Contractor may utilize the workforce employed on this contract to serve the maintenance needs of other parties, however, this Contract requires that the Department of Transportation's work shall take precedence over other work. The Engineer may grant the Contractor authorization to postpone IDOT work to address emergency situations of others, but the shortage of workforce shall otherwise be insufficient grounds for the Contractor's failure to perform routine or other non-routine work within the prescribed time constraints.

The Engineer retains the right to reject the Contractor's structure for management of the contract if the specific requirements defined herein are not addressed or if the proposed structure or staffing is such that the effective execution of contract performance is compromised. If work performance is not acceptable to the Engineer, the Contractor shall have thirty days, after written notification is received, to comply with a personnel position change, as approved by the Engineer, or liquidated damages shall be assessed.

The Contractor shall remain responsible for any and all union agreements applicable to his workforce on the Contract. Union jurisdictions and other union contract requirements shall not become grounds for failure to perform the contract work.

The Contractor shall provide individual photo card identification for all personnel working on the Electrical Maintenance Contract.

3.8.2 CONTRACT PERSONNEL DOCUMENTATION AND SUBMITTALS

The Contractor shall submit all EMC and Subcontractors Contract personnel time records, to the Illinois Department of Transportation, EEO/Labor Compliance, District 1, Schaumburg. The following weekly reports shall be submitted:

- Certified Weekly Payroll Reports, SBE 348
- A Weekly Workforce Report , SBE 956

If union apprentices are working on this Contract, local union certification or federal approval must be submitted prior to submitting certified payroll reports.

The Contractor shall maintain a current list of all personnel (including sub-contracting personnel) assigned work on the EMC, applicable radio call numbers, and telephone numbers. This list shall initially be furnished to the Engineer at the Pre-Construction meeting and the Contractor shall issue an updated list, at each monthly pay meeting, with changes in personnel highlighted on each revised list.

3.8.3 GENERAL WORKFORCE RESPONSIBILITIES

The Contractor's workforce shall possess the skills and knowledge necessary to perform all work consistent with the best practices of the trade. The workforce shall include personnel having certain special expertise, including, but not limited to the following:

- Materials Management
- General Electrical Power
- Building Wiring (Indoor Electrician)
- Motor Controls and Control Systems
- Various Types of Pump Rebuild
- Various Types of Mechanical Work
- Low Voltage Power Distribution Systems
- Roadway Electrical (Outdoor Lineman)
- Telemetry/Telecommunications
- Traffic Signal Closed Loop Monitoring System
- Fiber Optic Cable Installation and Repairs
- Hardware/Software Troubleshooting
- Dynamic Message Sign Technology
- Programmable Logic Controller Installation and Maintenance
- Lighting SCADA Trouble-shooting
- Pump Station SCADA Trouble-shooting
- Office Administration

3.8.4 ORGANIZATIONAL DOCUMENTATION

Certain operational capabilities, functions and relationships are prescribed in this Contract. The Contractor shall produce an organization chart to document the chain of command and demonstrate compliance with the requirements defined by the contract, including reporting relationships of field personnel. The submittal shall provide the name of individuals assigned to all positions as required herein, both dedicated and assigned (non-dedicated). This document shall be submitted with the pre-bid qualifications, re-submitted at the Pre-Construction Meeting with any proposed revisions, and submitted to the Engineer at any time there is a change in personnel or the chain of command.

The Engineer may also reject the assignment of specific personnel to certain functions if the Contractor fails to demonstrate the qualifications matching personnel to defined responsibilities.

3.8.5 PRINCIPAL (OWNER) OR PROJECT MANAGER RESPONSIBILITIES

Experience has shown that personal involvement of a Principal, an officer of the company with signature authority, is inevitable in all major or overall contract matters under the Contract. The Principal may, however, establish a Project Manager to be responsible for performance of the contract, and have the authority to fully represent the Principal in all matters on this Contract. The requirements for attendance at monthly pay meetings, signing of documents and meeting with Department representatives, and other overall-contract duties, may also be delegated to the Project Manager.

Any Project Manager so established shall have supervisory authority over all System Managers. The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

Reporting to Principal or Project Manager:

- Advanced Systems Manager
- Lighting and Extra Systems Manager – Dedicated position
- Pump Station System Manager
- Surveillance/DMS System Manager – Dedicated position
- Traffic Signal System Manager – Dedicated position
- Dispatch Supervisor
- Administrative Manager – Dedicated position

If at any time, the Engineer determines that a Project Manager has insufficient authority and flexibility to effectively manage the work under the contract, the Engineer retains the right to demand the Principal be in charge of the contract, with appropriate attendance at meetings, etc.

To assure 24-hour continuity of a person in responsible charge of the Contract, the Contractor shall establish a prioritized list of staff who are to act, with full authority to speak definitively for the Principal, relative to this contract, in the event of illness, vacation, or other similar lack of availability of the Principal and, if established, the Project Manager. The Engineer shall be notified as far in advance as possible whenever a substitute Principal officer, Project Manager or System Manager is necessary. System Managers may act in a temporary substitute capacity for the Principal or Project Manager, while retaining their day-to-day responsibilities, however, the Engineer must be notified of the substitution.

3.8.6 SYSTEM MANAGER RESPONSIBILITIES

System Managers shall report directly to the Principal or Project Manager as applicable. If specified herein to be dedicated fully to work under this Contract, System Managers may only be released from Contract obligations through written approval by the Engineer or his appointed representative. Responsibilities of the System Managers shall include:

- Authority to commit workforce and other resources at all times and/or as directed by the Engineer on a 24 hour basis, seven days a week
- Preparation of the daily agenda
- Daily review of ticket summary
- Daily review and timely distribution of all maintenance repair and modification work documentation including daily agenda, ticket follow-up data, and miscellaneous reports
- Overseeing of maintenance transfers and new installation inspections
- Lane closure requests and implementation of approved traffic control plans
- Coordination of emergency operations for the applicable system(s)

- On a rotating basis, be on call 24 hours per day as an Emergency Response Coordinator, prioritizing the emergency response for all electrical Systems. In this capacity the System Manager shall coordinate with the EMC Dispatch Center Supervisor and also have the authority to call out additional personnel for dispatching or patrol duties. (Refer to Article 4.0 Call-Out Policy).
- Supervision of all routine and non-routine work in the assigned system

3.9 DEDICATED PERSONNEL POSITIONS

3.9.1 RESPONSIBILITIES OF DEDICATED PERSONNEL

In order for the Contract to function effectively specific personnel functions are required to provide quality maintenance service to the public. Furthermore, the size of the Contract dictates that certain personnel be dedicated to this maintenance Contract in full-time capacities as specified herein. No dedicated personnel, shall hold more than one EMC job responsibility as described herein or as shown on the Contractor's organization chart, unless as approved in writing by the Engineer. The dedicated personnel in this Contract are paid through routine maintenance, and no additional compensation will be made for their work performed on non-routine work.

The forty (40) dedicated personnel as noted herein shall perform work as assigned for this Contract. Dedicated personnel are required to perform Contract work, routine and non-routine as specified herein and as directed by the Engineer at no additional cost to the Department, and may be utilized for emergency situations as noted herein.

Dedicated Positions in the EMC: (alphabetical order)

Advanced Systems Field Technician
EMC Administrative Manager
Lighting and Extra Systems Manager
Lighting Night-Rider Patrolman
Pump Station Specialist (Working Foreman)
Pump Station Crew (4)
Repair Crew (22)
SCADA Specialist
SCADA Trainee
Surveillance Specialist (Working Foreman)
Surveillance/DMS Patrolmen (4)
Surveillance Trainee
Traffic Signal Manager

3.9.2 ADVANCED SYSTEMS FIELD TECHNICIAN

The Contractor shall appoint a dedicated Advanced Systems Field Technician who shall have a minimum of five (5) years work experience in electrical construction and maintenance, ability to operate a bucket truck to access cameras, trouble-shoot CCTV, ability to operate a variety of test equipment for installing, servicing and testing electronic equipment, knowledge and ability to calibrate equipment to meet manufacturer and/or IDOT specifications, perform shop and field tests, and have advanced computer skills to troubleshoot network devices. This individual must meet the approval of the Engineer.

3.9.3 EMC ADMINISTRATIVE MANAGER

The Contractor shall appoint an EMC Administrative Manager, dedicated to this Contract, who shall work in the EMC Office and oversee all administrative functions of the Contract. This individual shall supervise the daily activities of the EMC Administrative Assistant.

The EMC Administrative Manager shall assure:

- System Managers have required EMCMS access
- System Managers work and submittals are in compliance with Contract requirements
- All agreed price work quotes are timely and follow Contract requirements
- All vendor warranty agreements are available
- All insurance policies are valid
- All EMCMS entries and submittals are correct and follow Contract requirements
- Traffic Signal Patrolmen submit proper photos for MCHD statements
- Timely payment to Specialty Work vendors
- Wireless communication device functions/inventory

The EMC Administrative Manager shall be responsible for the development and submittal of:

- Daily Agenda
- Monthly Routine Maintenance Work Documentation Book
- Monthly Routine Maintenance Work Invoice
- Quarterly DBE Goal Status Progress Report
- All EEO Contract Requirements
- All Sub-Contractor Agreements
- MCHD Statements and Monthly Summary Invoice
- MCHD Repair Photos
- MCHD Requested Information for Insurance Companies
- State Stock Monthly Report
- 3rd Party Damage Invoices and submittals
- Various documentation submittals as requested

The individual in this position shall have daily contact with Department Engineers and Technicians.

Required qualifications include:

- BA or BS Degree
- Minimum of three (3) years of business experience with a contractor or in a related field
- Minimum of five (5) years experience with Windows 98 or better and spreadsheet software
- Good verbal and written communication skills

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.9.4 LIGHTING AND EXTRA SYSTEMS MANAGER

The Contractor shall appoint an individual to the position of Lighting and Extra Systems Manager who shall be dedicated to this Contract and who shall have full daily responsibility for all maintenance and modification work of the Lighting System and Extra Systems, under this contract.

This individual shall be responsive to the needs of the Lighting and Extra Systems and may be requested to attend weekly work progress meetings at the electrical field office. Various IDOT system representatives shall have free access to this Manager to address specific system repair issues. In the event of conflicts in work priorities the Principal/Project Manager shall coordinate service acceptable to the Engineer.

This individual shall have the ability to manage a staff of twenty or more, shall communicate effectively, and have knowledge of electrical codes and work related safety practices (OSHA).

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

Required Qualifications:

- Minimum of ten (10) years electrical and mechanical maintenance experience as an electrical tradesperson with local electrical contractor companies working on the construction and maintenance of various types of highway lighting and/or other electrical systems
- Experience in the operation of IDOT electrical control circuits
- Ability to interpret contract drawings and wiring diagrams
- Familiarity with diesel engine power generators and related transfer switches for back-up power
- Familiarity with fiber optic signs and CCTV
- Familiarity with fiber optic trunk lines
- Familiarity with cable underground work
- A valid electrician's card
- Valid driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

The individuals appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.9.5 LIGHTING NIGHT-RIDER PATROLMAN

One (1) individual shall be dedicated to the EMC in the position of the all systems Night-Rider Patrolman, who conducts an outage survey for the advanced systems, highway lighting locations, sign illumination locations, navigational lighting locations, and extra system installations three (3) weeks per month, and works on the required database of lighting system lamp outages and luminaire repairs as well as other assigned duties for other times.

Required Qualifications:

- Minimum of two (2) years experience with Windows XP or 2000 and Excel software
- Minimum of two (2) years experience with the EMCMS
- Knowledge of IDOT highway lighting and sign structure identification system
- Ability to perform work at night
- Valid driver's license

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.9.6 PUMP STATION SPECIALIST (WORKING FOREMAN)

The Contractor shall appoint an individual as the Pump Station Specialist who shall be a Working Foreman, and shall be dedicated to this Contract. This individual shall supervise the PS Service Crew in their daily work activities at pump stations, shall conduct patrol inspections, and perform assigned routine or non-routine work. The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

The Pump Station Specialist shall be on-call for mechanical malfunctions or during emergencies at pump stations resulting from rainstorms, power outages, hazardous materials conditions, etc., which may cause travel hazards to the motoring public.

This individual shall be fully responsible for compliance with all NEC requirements.

Required Qualifications:

- Minimum of eight (8) years hands-on experience working with 240V and 480V 3 phase motors, relay logic control systems, vertical/submersible pumps and their appurtenant equipment
- Trained and skilled, capable of troubleshooting and repairing pumps and other mechanical equipment located at each pump station
- Familiarity with relay logic controls
- Valid electrician's card
- Valid commercial driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

3.9.7 PUMP STATION SERVICE CREW

The Contractor shall employ a Pump Station Service Crew, individuals sufficient in number, a minimum of four (4), dedicated to this Contract, to perform routine and non-routine work, including equipment malfunction trouble-shooting, follow-up repairs, testing, pump rebuilding and replacement work, and an inspection of each pump station once per month

The Pump Station Service Crew shall be on-call during emergencies at pump stations resulting from rainstorms, power outages, hazardous materials conditions, etc., which may cause travel hazards to the motoring public.

These individuals shall be fully responsible for compliance with all NEC requirements.

The individuals appointed to this position shall be approved by the Engineer prior to the start of the Contract. The names and work assignments of the dedicated repair crew shall appear on the Daily Agenda Repair and PS Crew Assignment sheet.

Required Qualifications:

- Minimum of five (5) years hands-on experience working with 240/480V 3 phase motors
- Familiarity with HVAC
- Knowledge of pump maintenance procedures
- Familiarity with pump break-down and re-builds
- Familiarity with the installation of submersible/column pumps
- Valid electrician's card
- Valid commercial driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

3.9.8 REPAIR CREW AND SUPPLEMENTAL ELECTRICIANS

The Contractor shall employ a minimum contract repair crew workforce of twenty-two (22) individuals whose work shall be dedicated to the repair work on this Contract. Foremen may be applied toward required crew personnel.

When assigned to work on a specific System, the Repair Crew personnel shall be made responsible to the Contractor's manager of the respective System for the work.

The Contractor shall provide 1000 hours per year of labor for two additional qualified Electricians to perform electrical work within District 1. A spreadsheet accounting for the use of these hours, the name(s) of individuals performing the work, date of work, authorization number and description of work shall be furnished in the monthly routine work submittal book. Hours of work shall only be counted for actual work performed. All equipment and transportation shall be incidental and covered under routine maintenance.

From the twenty-two (22) dedicated repair crew, the Contractor shall train, staff, and provide proper equipment for:

- Three (3) loop crews to operate simultaneously, although they need not be exclusively assigned to loop repair work

- Two (2) light tower crews to operate simultaneously, although they need not be exclusively assigned to tower work

Other work examples include damage repair; motorist caused damage repair, modifications to system installations, troubleshooting special maintenance problems, cable repairs, temporary signal installations, loop repairs, lighting outages, and other authorized routine or non-routine work.

Unless otherwise permitted by the Engineer, the Contractor shall have 50% of the required level of repair crew personnel engaged in contract work on a daily basis by January 1, 2011, and the required 100% staffing by April 1, 2011, and on a continuing daily basis through the remainder of the contract.

Required Qualifications:

Ten (10) of the required twenty (22) individuals shall have:

- Valid electrician's card and a minimum of four (4) years electrical and mechanical maintenance experience as an electrical trades person with local electrical contractor companies

One (1) individual shall have:

- Minimum of two (2) years of work experience in splicing, termination and testing of fiber optic cable
- Successfully completed a four-day (minimum) training in the "installation of fiber optic products" conducted by a major manufacturer of fiber optic products or a generic fiber training session as approved by the Engineer

One (1) individual shall be:

- Skilled to perform electrical work within buildings, with valid union license

All individuals shall have:

- Union journeymen level electrician's license
- Skills in all typical highway system general work, construction and/or repair of traffic signals, surveillance equipment, lighting or sign equipment, etc.
- Ability to interpret contract drawings and wiring diagrams
- Ability to read current and voltage readings and use meggers, multimeters, and other test equipment
- Valid driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

The individual(s) appointed to this position shall be approved by the Engineer prior to the start of the contract. The names and work assignments of the twenty-two (22) dedicated repair crew and the two (2) Supplemental Electricians shall appear on the Daily Agenda Repair and/or PS Crew Assignment sheet.

3.9.9 SCADA SPECIALIST AND TRAINEE

The Contractor shall assign individuals to the positions of SCADA Specialist and SCADA Trainee, who shall be dedicated to contract work, and shall perform pump station patrol inspections, troubleshoot pump station and lighting SCADA systems, Advanced System, and occasionally troubleshoot malfunctions on the Dynamic Message System.

The SCADA Specialist and Trainee shall be on-call for emergency response situations or call-out for emergencies at pump stations resulting from rainstorms, power outages, hazardous materials conditions, etc., which may cause travel hazards to the motoring public.

These individuals shall be fully responsible for compliance with all NEC requirements.

The individuals appointed to this position shall be approved by the Engineer prior to the start of the Contract.

Required Qualifications:

- Electrical Engineering degree or equivalent technical school certification
- Five (5) years experience with basic electronics and electronic components, such as relays & switches, etc.
- Three (3) years working experience on Windows 95/98/2000 and NT and familiarity with Windows XP operating system setup
- Two (2) years experience with CCTV systems and fiber optic transceivers
- Working knowledge of ladder logic GUI programming
- 1 Individual - Certified to trouble-shoot Allen Bradley programmable logic controllers, PLC 5, and RS Logics 5000 controllers
- 1 Individual - Trained on RSView 32 Project Development, Control Logix 5000 and Liq. V Programming
- Familiarity with wiring of control systems
- Familiarity with ladder logic programming or traffic signal programming
- Familiarity with telephone data line troubleshooting via implementation of break-out box
- Familiarity with dynamic data exchange communications
- Familiarity with open database architecture
- Valid electrician's card
- Valid driver's license and ability to respond in the field

3.9.10 SURVEILLANCE/DMS SPECIALIST (WORKING FOREMAN)

The Contractor shall appoint a journeyman electrician to the position of Surveillance/DMS Specialist (Working Foreman) to be dedicated to the Surveillance/DMS Systems and have daily responsibility to oversee the work of the Surveillance/DMS Patrolmen. With Engineer approval, this individual may also serve as the Surveillance/DMS Manager.

This individual normally performs patrol duties on the Surveillance/DMS Systems, investigates 3rd party damage issues, oversees maintenance transfers or new installation inspections, coordinates requests for lane closure approvals, and attends field site meetings to discuss equipment modifications.

Required Qualifications:

- Minimum of ten (10) years electrical maintenance experience in telemetry, traffic signals, electrical controls, instrumentation, communications networks or other similar large-scale wide area distributed systems and with experience in Surveillance/DMS system maintenance and in electrical construction
- Significant experience with large scale FSK tone telemetry systems
- Significant experience with various types of telecommunication systems
- Experience in planning and coordinating diverse and numerous work tasks
- An IMSA level II certificate and Work Zone Safety certificate
- Familiarity with single mode fiberoptic cable installations

- Familiarity with IDOT Traffic Control Standards
- Familiarity with CCTV system troubleshooting and repair
- Ability to troubleshoot and repair fiberoptic cable
- Familiarity with fiber optic and LED DMS and CCTV
- Familiarity with OSHA Safety Standards
- Communication and documentation skills
- Valid electrician's card
- Valid driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

During emergencies resulting from rainstorms, power outages, hazardous materials conditions, etc., which may cause travel hazards to the motoring public, the Surveillance System Manager shall be responsible for the Contractor's emergency response call-out for the Surveillance Systems. This individual shall meet the approval of the Engineer.

3.9.11 SURVEILLANCE/DMS PATROLMEN

The Contractor shall appoint a minimum of four (4) Surveillance/DMS Patrolmen, dedicated to the Surveillance/DMS System. Their basic work assignments shall be the patrol duties, preventive maintenance, outage surveys at dynamic message sign locations and response services for the Surveillance/DMS Systems. It is not expected that call-out duties on other systems shall be required except in emergency situations, however, these Patrolmen shall be cross-trained for the Traffic Signal System.

The individuals appointed to this position shall be approved by the Engineer prior to the start of the contract.

Required Qualifications:

- Minimum (5) years construction experience with electronic equipment and communication repair
- Minimum (5) years Surveillance System maintenance experience
- Minimum (3) years traffic signal maintenance experience
- Minimum (3) years DMS MOSYS maintenance experience
- Fiber flip disk and LED DMS maintenance experience
- Ability to troubleshoot low voltage equipment malfunctions
- Familiarity with single mode fiberoptic cable installations
- An IMSA level II certificate
- Familiarity with IDOT Traffic Control standards
- Familiarity with OSHA safety requirements
- A valid electrician's card
- Valid driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

3.9.12 SURVEILLANCE/DMS CREW TRAINEE

The Contractor shall assign an individual to the position of Surveillance/DMS Crew Trainee, dedicated to the Surveillance/DMS system, who shall perform preventative maintenance, patrol duties, and provide backup assistance during emergencies for the Surveillance/DMS Systems Patrolmen.

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract. The Contractor shall confirm to the Engineer, by June 1, 2011, that the trainee has enrolled in the local union's electronics school.

Required Qualifications

- 1 year Construction experience in either Traffic Signals or Surveillance installations
- Union helper or groundsman level status
- Attain IMSA level 1 certification by October 1, 2011
- Valid driver's license and the ability to respond in the field

- Available for 24/7 emergency call-out

3.9.13 TRAFFIC SIGNAL SYSTEM MANAGER

The Contractor shall appoint an individual to the position of Traffic Signal System Manager who shall be dedicated to this Contract and have full daily responsibility for all maintenance and modification work of the Traffic System installations under this Contract.

The Traffic Signal System Manager shall retain supervisory authority over all EMC work performed by all Patrolmen assigned to the Traffic Signal System, including maintenance response work outside the work of this Contract, but he shall not be responsible for traffic signal construction work being performed by the Contractor under other contracts. The Traffic Signal Systems/Railroad Specialist, the Traffic Signal System/Railroad Assistant, and all Equipment Shop personnel shall report to the Traffic Signal System Manager.

During emergencies resulting from rainstorms, power outages, hazardous materials conditions, etc., which may cause travel hazards to the motoring public, the Traffic Signal System Manager shall be responsible for the Contractor's emergency response call-out for the Traffic Signal System.

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

Required Qualifications

- Degree from an Electrical Technical Institute or Electrical Engineering College
- Have or be in the position of obtaining an ISM level III certificate by July 1, 2011
- Ability to manage a technical staff of fifty (50) or more and communicate effectively
- Minimum of ten (10) years experience in construction, maintenance, and operation of all traffic signals and traffic signals systems currently being used in District 1
- Hands-on ability to solve trouble calls for any traffic signal cabinet or communications failure
- Knowledge of the operation of software for the Econolite, Eagle, Peek, Traconex, and Transyt Traffic Signal Closed Loop Systems, controller and equipment operations manuals, and equipment safety and Work Zone Traffic Control and Protection measures
- Valid electrician's card
- Valid driver's license and ability to respond in the field

3.10 ASSIGNED CONTRACT PERSONNEL POSITIONS

3.10.1 RESPONSIBILITIES OF ASSIGNED CONTRACT PERSONNEL

Assigned Contract Personnel hold required positions in the EMC, are listed on the EMC organization chart, and normally work daily on the EMC, but since they may have additional assignments other than the EMC they are not required to be dedicated to Contract work.

Assigned Positions in the EMC:

Advanced Systems Manager (may be filled by the Advanced Systems Specialist)
Dispatch Center Supervisor
Dispatch Center Personnel
EMC Administrative Assistant
Equipment Shop Personnel
Patrolmen
Pump Station Manager
Surveillance/DMS Manager (may be filled by Dedicated Surveillance/DMS Specialist)
Traffic Signal/Railroad Specialist
Traffic Signal Systems Assistant

3.10.2 ADVANCED SYSTEMS SPECIALIST/MANAGER

The Contractor shall appoint a journeyman electrician to the position of the Advanced Systems Specialist (Working Foreman) who shall have full daily responsibility for all maintenance and modification work of the Advanced Systems under this Contract. With Engineer approval, this individual may also serve as the Advanced Systems Manager.

This individual shall have a minimum of five (5) years of management experience in electrical construction and maintenance; have an acceptable knowledge of the operations of the Advanced System, and a minimum of five (5) years supervisory experience. The Advanced Systems Manager shall have the full authority to speak definitively for the Principal, with signature authority relative to this Contract. This individual must meet the approval of the Engineer.

The Advanced Systems Specialist/Manager shall review all Tickets daily and correct, if necessary, to assure correct repair terminology, status of repair work, etc., prior to the Contract Administrator sending the Ticket Summary Report to Department personnel. This individual shall be responsible for the scheduling of all Advanced Systems work.

3.10.3 DISPATCH CENTER SUPERVISOR

The Contractor shall provide an assigned EMC Dispatch Supervisor in the EMC Dispatch Center, on duty during the hours of 7 a.m. to 3 p.m., Monday through Friday. A substitute, on-call EMC Dispatch Supervisor shall be available for consultation by the EMC dispatch staff or IDOT Departmental staff during the remaining hours of the week.

It is the responsibility of the EMC Dispatch Center Supervisor to supervise the EMC dispatch staff, to monitor the entry of all tickets in the EMCMS in order to meet the one (1) hour entry requirement, and to disseminate on a daily basis the ticket summary reports and maintenance transfer reports to all Departments and Contractor System Managers, and to provide monthly updated patrol reports for the routine maintenance work submittal book.

Required Qualifications:

- Minimum of four (4) years experience in electrical construction work administration or dispatch
- Minimum of two (2) years experience with Windows XP/2000 or the EMCMS
- Good verbal and written communication skills

The individual(s) appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.10.4 DISPATCH CENTER PERSONNEL

The Contractor is responsible to provide trained, responsive dispatchers, 24/7.

Minimum Required Staffing:

Monday through Friday, 7 A.M. to 3 P.M. -- 2 dispatchers and 1 supervisor

Monday through Friday 3 P.M. to 11 P.M. -- 2 dispatchers and an on-call supervisor

Monday through Friday 11 P.M. to 7 A.M. -- 1 dispatcher and an on-call supervisor

Saturday & Sunday, 24/7 – 1 dispatcher and an on-call supervisor

During Storm Alerts (as received from IDOT ComCenter):

2 dispatchers and an on-call supervisor, (from start time of storm until clearing notification is received from IDOT ComCenter)

Historically the EMC Dispatch Center creates approximately 10,000 work tickets per year on the EMCMS. Other dispatcher duties include documentation of cable locate requests, 3rd party damage reports, maintenance transfers, water on pavement reports, maintenance of EMCMS database, and call-out duties for incidents reported to the Dispatch Center for locations as maintained by the state, county, and municipalities.

Although past dispatching experience is not a requirement, it is essential that the individuals on staff be willing to learn, both dispatching and computer skills for the EMCMS, and are able to

speak clearly and distinctly. Due to the importance of the dispatcher duties to the success of the EMC operations, if the dispatcher work performance is not acceptable to the Engineer, routine maintenance payment may be withheld, or liquidated damages assessed.

3.10.5 EMC ADMINISTRATIVE ASSISTANT

The administrative functions on the EMC require either a full-time EMC Administrative Assistant or the duties may be shared between a part-time Administrative Assistant and an EMC Dispatcher.

Suggested work includes:

- EMCMS Logging of non-routine work authorizations
- EMCMS Logging of non-routine work completion dates
- EMCMS Entry of motorist caused damage repair logs as received from crews
- EMCMS Entry of motorist caused damage statements (invoices)
- EMCMS Entry of work quotes
- EMCMS Entry of state stock inventory
- EMCMS Non-Routine work invoicing
- 3rd party damage repair invoicing
- Coordination of Contractor Advisory Reports
- Coordination of the monthly Routine Maintenance Work Documentation Book
- Routine maintenance monthly invoicing
- Coordination of weekly certified payroll submittals
- Subcontractor approval documentation submittals
- DBE documentation submittals
- EEO documentation including workforce analysis submittals

Qualifications include a minimum five (5) year's administrative experience, preferably with a contractor or in a related field, a minimum of five (5) years' experience with Windows 98 or better software, spreadsheet software, and good verbal and written communication skills.

The individual(s) appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.10.6 EQUIPMENT SERVICE SHOP PERSONNEL

The Contractor shall provide sufficient Equipment Service Shop personnel to meet all equipment repair time requirements as stated herein. Work shall include, but is not limited to, the service and overhaul of Surveillance and DMS system equipment, and traffic signal equipment. Types of work includes repair of controllers and programming, bench tests all types of electromechanical, CMOS, solid state, microprocessor, analog and digital control equipment, and surveillance system tone equipment including DMS control equipment. The Contractor shall be aware of requirements stated herein as to the use of new versus repaired equipment (refer to specific system articles).

Required Qualifications:

- Associate Degree from a 2-year technical college
- Minimum five (5) years of related equipment troubleshooting, bench experience, and problem solving diagnostic experience

The individual(s) appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.10.7 PATROLMEN

Patrolmen shall perform response services, on a daily basis, for all of the various systems under this Contract, but the basic work assignment for the Patrolmen shall be the regular patrol of traffic signals, and emergency call-out response for the Traffic Signal System. Those patrolmen assigned to the Traffic Signal System shall also be cross-trained in the Surveillance/DMS Systems.

Although not dedicated to EMC Contract work, the Contractor shall assign twenty-six (26) individuals to be TS Patrolmen. The Contractor is required to have these Patrolmen on duty to meet one (1) hour in-district response requirements as stated in Article 4.0 and patrol requirements as stated in Article 10.0.

A sufficient number of the Patrolmen shall be scheduled for night, weekend and holiday patrol duties to meet the one (1) hour in-district response requirements.

The TS patrolmen shall maintain the integrity of all timing, parameter programming information, traffic responsive and time of day signal systems, and shall be trained to troubleshoot equipment malfunctions including all closed loop signal system malfunctions.

If the routine work performance, including response time, is not acceptable to the Engineer, the number of assigned Patrolmen shall be increased to twenty-eight (28). The Contractor shall have thirty days to comply with this change, after written notification is received.

Required Qualifications:

TS Patrolmen

- Experienced journeymen-level technician
- An IMSA level II certificate
- Minimum of eight (8) years experience with NEMA traffic signal closed loop systems operating in the traffic responsive mode.
- Valid electrician's card
- Valid driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

The individuals appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.10.8 PUMP STATION SYSTEM MANAGER

The Contractor shall appoint an individual to the position of Pump Station System Manager who shall be assigned to have full daily responsibility for all maintenance and modification work of the Pump Station System. The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

The Pump Station System Manager position need not be dedicated to this Contract, but he is expected to devote a significant portion of his time to pump station activities on a daily basis. The other work activities of the Pump Station System Manager must be significantly related to the technology and type of work employed in the Pump Station System, and shall allow daily supervision of work activities of the Pump Station Specialist (working foreman), and Pump Station Service Crew, SCADA Specialist, and SCADA Trainee. He/she shall be stationed at the facility from where the Pump Station Service Crew is dispatched daily.

It is the responsibility of the Pump Station Manager to recommend modifications or upgrades to optimize the existing PS System, to troubleshoot all facets of pump station equipment, and to be fully responsible for compliance with all NEC requirements.

During emergencies at pump stations resulting from rainstorms, power outages, hazardous materials conditions, etc., which may cause travel hazards to the motoring public, the Pump Station System Manager shall be responsible for the Contractor's emergency response call-out for the Pump Station Specialist, Pump Station Specialist Trainee, and Pump Station Service Crew, and when assigned by the Project Manager, shall direct other Contract personnel in emergency response duties for the Pump Station System. Refer also to responsibilities for hazardous materials operations in Article 4.0.

Required Qualifications

- Technical Institute certificate/diploma
- Extensive construction experience in mechanical/electrical of pump station or commercial work
- Facility and building work
- Basic fundamental skills, knowledge and understanding of power distribution
- Eight (8) years of electrical and mechanical maintenance experience, working on all types of storm water pumping station equipment
- Knowledge of implementation and preventive maintenance of vertical and submersible pumps
- Familiarity in the maintenance and operation of switch-gear and circuit protection equipment
- Familiarity with motor control panel/alarm wiring
- Familiarity with low voltage motor-control centers for 3-phase (240/480) systems
- Familiarity with engine power generators and related transfer switch equipment
- A valid electrician's card
- Valid driver's license and ability to respond in the field
- Available for 24/7 emergency call-out

3.10.9 TRAFFIC SIGNAL SYSTEMS/RAILROAD SPECIALIST

The Contractor shall appoint a highly skilled and trained Engineer or Technician to provide technical expertise to all patrolmen and signal technicians responsible for the traffic signal systems, and to manage the trouble-shooting of all types of system equipment at various field sites. Responsibilities shall also include the overall maintenance of the Closed Loop Traffic Signal Monitoring System Equipment, alarm monitoring and follow up of all CLMS daily activities.

Required Qualifications:

- Degree from an Electrical Technical Institute or Electrical Engineering College
- An IMSA level III certificate
- Ability to communicate effectively
- Demonstrable knowledge and minimum of eight (8) years experience in operations of all traffic signals and traffic signals systems currently being used in District 1
- Hands-on ability to solve trouble calls for any traffic signal cabinet or communications failure
- Knowledge of the operation of software for the Econolite, Eagle, Peek, Traconex, and Transyt Traffic Signal Closed Loop Systems, controller and equipment operations manuals, and equipment safety and Work Zone Traffic Control and Protection measures
- Valid electrician's card
- Valid driver's license and ability to respond in the field

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.10.10 TRAFFIC SIGNAL SYSTEMS ASSISTANT

The Contractor shall appoint a qualified Traffic Signal Systems Assistant who shall work daily with the Traffic Signal System/Railroad Specialist to provide technical expertise to all patrolmen and signal technicians. Responsibilities include alarm monitoring and CLMS daily work activities.

Required Qualifications:

- Degree from an Electrical Technical Institute or Electrical Engineering College
- Ability to communicate effectively
- Demonstrable knowledge and minimum of four (4) years experience in traffic signal maintenance or demonstrate skills in computers or electronics
- Valid electrician's card
- Valid driver's license and ability to respond in the field

The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

3.11 PERSONNEL DOCUMENTATION

The Contractor shall remain responsible for any and all union agreements applicable to his/her work force on this contract. Union jurisdictions and other union contract requirements shall not become grounds for failure to perform the contract work.

If union apprentices are working on this contract, local union certification or federal approval must be submitted prior to submitting certified payroll reports.

The Contractor shall submit EMC and all Subcontractors' records, to the EEO/Labor Compliance Area, District 1, Schaumburg, of the following reports:

- Certified Weekly Payroll Reports, SBE 348
- A Weekly Workforce Report , SBE 956
- Quarterly DBE reports

The Contractor shall submit to the Engineer, weekly, a certified Systems Report with the following:

1. Name of employee
2. Total weekly hours worked by the employee
3. Total weekly hours worked on EMC, listing hours worked per system and by category (routine and non-routine) and subcontractor work.

The Contractor shall maintain a current list of all personnel (including sub-contracting personnel) assigned work on the EMC, applicable radio call numbers, telephone numbers, and/or pager numbers. This list shall initially be furnished to the Engineer at the Pre-Construction meeting and the Contractor shall issue an updated list, at each monthly pay meeting, with changes in personnel highlighted on each revised list.

3.12 PERSONNEL TRAINING PROGRAMS

3.12.1 GENERAL REQUIREMENTS

Proper training of contract personnel shall assure acceptable maintenance by the Contractor while attaining the highest level of safety for contract personnel and the motoring public. The training programs listed herein shall be completed by June 1, 2011, unless otherwise approved by the Engineer. Although these personnel training programs shall be included under routine maintenance, depending upon the dedicated personnel workday, the Contractor may be required to conduct these training sessions on employee overtime. Training may be required more than once per year if situations and/or personnel changes occur.

The training programs shall be taught by qualified instructors, and where certification of the trainer is applicable, the trainer shall be certified. The Contractor shall provide the Engineer a list of the proposed training schedule with the name of the trainer at the Pre-Construction Meeting. The instructor and instructional materials shall be approved by the Engineer prior to the training sessions. The Contractor shall submit updates in the monthly routine work documentation book with any training schedule changes and following each training session shall submit an employee attendance list. The Contractor shall provide for the attendance of IDOT inspectors, maximum of twelve, at each training session. The Engineer may arrange for use of the District 1 auditorium classroom for large training session(s) if sufficient advanced notice is given.

3.12.2 OSHA AND OTHER SAFETY TRAINING

The Contractor shall establish training for all personnel in applicable OSHA requirements and other safety-related topics, to include but not be limited to; lock-out/tag-out, confined space, safety, hazmat training, respirator training (as applicable), use of safety harnesses for work on signs and other structures and basic first aid.

3.12.3 NATIONAL ELECTRICAL CODE/GROUNDING/LIGHTNING PROTECTION

The Contractor shall establish a training program(s) not less than one (1) day in duration per contract year to address proper and safe grounding, and/or National Electrical Code, and/or lightning protection of electrical systems. The program shall be taught by a professional trainer regularly engaged on this topic, and the training shall specifically address applications to typical IDOT systems such as electrical installation and maintenance, traffic signals, highway lighting and pump stations. This training shall be provided for all appropriate technical personnel, including all personnel engaged in electrical wiring work.

3.12.4 EQUIPMENT/SYSTEM TRAINING

The Contractor shall provide in-house or local training sessions for those individuals who would be maintaining specific equipment on this Contract, for equipment requiring detailed maintenance or troubleshooting and/or situations requiring special attention, or for specific procedures which are unique to this Contract. Requirements include:

Traffic Signal System

The Contractor shall provide user training on traffic signal controller operations, from the controller manufacturers, for all Patrolmen, the TS Specialist and Trainee, Surveillance/DMS Patrolmen, and IDOT personnel, for each of the types of controllers in use by the Traffic Signal System in District 1, or as approved by the Engineer, including but not limited to:

- NEMA TS-1 cabinets
- NEMA TS-2 cabinets
- Econolite System controllers
- Eagle System controllers
- Peek System controllers
- Intersection controllers – Transyt, TCT, Multisonic, Traconek, Eagle, Econolite, Peek, Honeywell
- Video Detection – Iteris, Autoscope
- Conflict Monitors – EDI
- MMU – EDI, Reno, Econolite
- BIU – Eagle, Econolite

- Traffic Signal troubleshooting
- Traffic Signal System timings
- Fiber Optic troubleshooting
- Radio interconnect troubleshooting
- System and intersection controller software uploading and downloading
- Detector amplifiers
- Grounding troubleshooting
- UPS systems
- Wireless Magnetic and Radar Vehicle Detection

Lighting System

Personnel working on the Lighting System shall have basic training on the following items:

Cabinet Control:

- Clock programming
- Control wiring
- SCADA MOSCAD alarm response
- Lock out – tag out
- Lighting SCADA training

The Contractor shall schedule formal advanced training from an approved trainer on the Lighting SCADA radio (ACE3600) system for the SCADA Specialist, SCADA trainee, applicable patrolmen and three (3) IDOT Engineers/Technicians.

Pump Station System

The SCADA Specialist, SCADA Trainee, Surveillance/DMS Patrolmen, PS Specialist, PS Service Crew, Repair Crew or any Contractor personnel, conducting any routine and/or non-routine work on the Pump Station System shall have introductory training on the following items:

- Ladder logic
- Mechanical training
- Emergency response training for water-on-pavement
- Emergency response training for hazardous material situation
- Lock out – tag out
- PS SCADA maintenance and troubleshooting

The Contractor shall schedule advanced training on the SCADA system for applicable employees and the PS IDOT Engineer. Training shall include how to make changes or updates to show old and new equipment on the existing system, and removing or adding a pump station from the system. The Contractor shall develop and submit a manual to explain the SCADA system change procedures for the equipment at the pump stations, the ComCenter, and Contractor locations, by April 1, 2011.

EMC Dispatch Center

The Dispatch Center Supervisor, substitute supervisors, and all Dispatch Center personnel shall be trained on Contract EMCMS entry and documentation requirements and SCADA requirements.

Prior to the start of the Contract:

The Contractor shall conduct a one-day training seminar on EMCMS entry and documentation and other Contract requirements. Upon completion of the seminar each dispatcher on duty shall be competent to complete the following:

- Ticket entry on EMCMS
- Maintenance transfer documentation

- Cable locate entry of EMCMS
- Traffic signal patrol logging
- Water on pavement reporting
- Acknowledge/Response for PS SCADA
- Acknowledge/Response for Lighting SCADA
- Acknowledge/Response to AEGIS alarms

Prior to the EMCMS training seminar the Contractor shall conduct a field tour for all dispatch personnel to learn the names of the various systems' electrical equipment to aid in Ticket entry and visit the IDOT ComCenter. An IDOT Engineer/Inspector shall also accompany the group.

3.13 SAFETY PROGRAMS AND REQUIREMENTS

3.13.1 GENERAL REQUIREMENTS

The Contractor shall establish a formal safety program to assure overall safety of EMC personnel, operations and the electrical systems maintained as they affect the safety of the motoring public and the public at large. The Contractor shall furnish an overall description of this program at the Pre-Construction Meeting, and furnish the name of the Safety Coordinator or Manager.

As part of the safety program, the Contractor shall initiate a procedure that states: "When a circuit is de-energized, the Contractor shall meter the downstream circuits with an instrument to assure that they are de-energized and safe for working conditions." The Contractor shall be fully responsible for compliance with all OSHA requirements. Particular attention is directed to the lock-out/tag-out requirements to assure that systems undergoing maintenance work cannot be inadvertently energized, causing harm to maintenance person.

The Contractor shall assure that all personnel be trained in, and have knowledge of, approved equipment grounding methods for all work under this contract. The Contractor shall be fully responsible for compliance with all NEC requirements. The Contractor shall be responsible for the maintenance of all existing system and equipment grounding under routine maintenance.

Should locations be identified for which system or equipment grounding is missing or otherwise not in compliance with NEC requirements, the Contractor is obligated to report such locations to the Engineer.

The Contractor shall keep all systems free of hazards to the work force and the public, all in conformance with Article 107 of the Standard Specifications. Special care shall be taken to assure that electrical systems are not left in an exposed or otherwise hazardous condition. All electrical boxes, cabinets, pole handholes, etc., which contain wiring, either energized or non-energized, shall be closed or shall have their covers in place and shall be locked when configured for locking, except when work is being done at the location at the moment. If the worksite is left, enclosures shall be closed and no potentially hazardous electrical situation shall be left unattended.

3.13.2 CONFINED SPACE ENTRY AND TRAINING

The Contractor shall submit at the Pre-Construction Meeting, a copy of the Contractor's confined space entry and training policy which shall be in full compliance with all OSHA requirements for the duration of this Contract. Employees shall be required to:

- Follow all general safety rules and regulations
- Abide by confined space regulations
- Wear proper safety equipment at all times
- Report unsafe conditions to supervisory personnel and IDOT Engineer
- Report any injuries sustained within a confined space

The Contractor shall train and provide safety equipment to all field personnel that are involved with work within a space, as defined as confined space within the training policy. A listing of personnel who are trained or who will be trained for entry into confined spaces shall be included in the Pre-Construction Meeting submittal.

3.13.3 HAZARDOUS MATERIALS OPERATIONS

All activity with contaminated waste shall conform to the Department's Standard Specifications for Road and Bridge Construction Article 669. The Contractor shall employ for emergency hazmat response the services of, or have a full-service Subcontractor designated as the EMC hazardous waste contractor, familiar with and capable of complying with all federal, state, or local regulatory requirements/regulations pertaining to RCRA hazardous and special non-RCRA waste management, and shall be responsible for ensuring the implementation of these requirements. The hazardous waste contractor shall have a 24-hour emergency call number and shall be capable of responding to a pump station within one (1) hour of notification. No additional compensation will be allowed for these services.

The Pump Station Manager shall direct the hazardous waste contractor and other Contractor personnel as necessary to remove and properly dispose of oil, gasoline or other pollutants from the pump station wet pit, or other area as directed. Removal shall be by means other than pumping pollutants into the normal station discharge sewer or receiving open water channel. (The Contractor may store suitable absorbent battens in a drum at each pump station which discharges to a waterway.)

The Contractor shall provide a list of proposed full service contractors, for Engineer approval, at the Pre-Construction Meeting.

The EMC hazardous waste contractor shall:

- Coordinate with all pertinent regulatory agencies to secure all necessary permits and approvals and shall be responsible for coordinating all permits with the IEPA
- Submit to the Engineer, for approval, a copy of all federal, state, or local required licensing documents to perform this work
- Select a hazardous/special waste landfill/disposal facility, verifying that selected landfill/disposal facility is in compliance with applicable standards for hazardous and special waste and whether the disposal facility is presently, has previously been, or has never been, on the U.S. EPA's National Priorities List or the RCRA List of Violating Facilities
- Obtain written approval of the selected landfill/disposal facility from the Engineer, who, reserves the right to review and to accept or reject the selection

- Perform all tests required and make all necessary arrangements for waste disposal approval with the selected landfill/disposal facility

Be responsible for transporting and disposing all material classified as a “non-special waste”, “special waste” or hazardous waste” from the job site to the approved landfill/disposal facility, assuring that the transporter and vehicles comply with all federal, state, and local regulations governing the transportation of non-special, special or hazardous wastes.

- Shall prepare a technical report within 30 days of the conclusion of the project, describing the activities conducted during the life of the project and submit two (2) copies to the Engineer

If the state police or municipal agency has declared a hazardous material spill which affects system equipment and the IDOT Claims Department collects repair costs through the Motorist Caused Damage Repair fund, the Department shall make separate payment to the Contractor of the repair costs collected, following submittal of complete documentation of material purchases and labor repair costs. The Department reserves the right to use Pay Item prices, where applicable, for materials and equipment. The IDOT Claims Department has the final determination as to the amount of the repair cost recovery.

3.14 TRAFFIC CONTROL AND SAFETY

When a project is located in close proximity to a railroad grade crossing, regardless of whether it is interconnected to the crossing, the Contractor should be aware of the construction-related conditions that may cause traffic to back up onto the railroad tracks. When such queuing is likely, the Contractor should consider additional maintenance of Traffic measures or other procedures to satisfy the requirements of the current edition of the MUTCD for the work zone conditions and railroad-highway grade crossing.

3.14.1 TRAFFIC CONTROL PLAN

The Contractor shall provide bound copies of their Traffic Control Plan for the Electrical Maintenance Contract operations, for all patrol vehicles, work crew vehicles, and supervisory vehicles.

The Contractor shall provide a copy of their Traffic Control Plan to the IDOT Expressway/Traffic Operations Engineer for review prior to or at the Pre-Construction Meeting. The Contractor shall submit the name of the subcontractor for traffic control installation and maintenance, if one shall be requested for use on this Contract, at the Pre-Construction Meeting.

3.14.2 KEEPING THE EXPRESSWAY OPEN TO TRAFFIC

The Contractor shall provide the necessary traffic control devices to warn the public and to delineate the work zone as required in these Special Provisions, the Standard Specifications for Road and Bridge Construction, latest version, Supplemental Specifications, the “Illinois Manual on Uniform Traffic Control Devices for Streets and Highways”, “Highway Standards”, the District One Traffic Control and Protection, latest version. The Contractor's personnel shall be limited to these barricaded work zones and shall not cross the expressway.

The governing factor in the execution and staging of work is to provide the motoring public with the safest possible travel conditions on the expressway through the work zone. The Contractor shall arrange his operations to keep the closing of lanes and/or ramps to a minimum.

The Contractor shall request and gain approval from the Illinois Department of Transportation's Expressway Traffic Operations Engineer (847-705-4151) twenty-four (24) hours in advance of all daily lane, partial ramp and shoulder closures and seventy-two (72) hours in advance of all permanent and weekend closures on all Freeways and/or Expressways in District One. Shoulder closures will not be permitted on weekdays (Monday through Friday) from 5:00 a.m. to 9:00 a.m. and from 3:00 p.m. to 7:00 p.m. Lane closures hours, if needed, will be determined by the expressway Traffic Operations Engineer, and will be made a part of the Traffic Control Plan.

The approval for emergency closures or emergency moving operations during the normal workday shall be requested from the Expressway Traffic Operations Engineer (847-705-4151). After office hours request for approval shall be made to the ComCenter, (847-705-4612) as soon as the need is determined, prior to the Contractor's arrival on the expressway.

All daily lane closures shall be removed during adverse weather conditions such as rain, snow, and/or fog and as determined by the Engineer.

Additional lane closure hour restrictions may have to be imposed to facilitate the flow of traffic to and from major sporting events and/or other events.

Private vehicles shall not be parked in the work zone. Contractor's equipment and/or vehicles shall not be parked on the shoulders or in the median during non-working hours. The parking of equipment and/or vehicles on State right-of-way will only be permitted at the locations approved by the Engineer.

3.14.3 TRAFFIC CONTROL DEFICIENCIES

Upon notification from the Engineer or Department Expressway/Traffic Operations personnel, the Contractor shall dispatch qualified personnel immediately to make needed corrections of deficiencies that constitute an immediate safety hazard and/or the blocking of traffic lanes or ramps. If the Contractor fails to correct the deficiency within the specified time, a daily monetary deduction will be imposed, in accordance with Article 105.03 (b) of the Standard Specifications. This time period will begin with the time of notification to the Contractor and end with the Resident Engineer's acceptance of the corrections.

3.15 VEHICLES

3.15.1 GENERAL REQUIREMENTS

The Contractor shall provide at all times sufficient vehicles and construction equipment to perform the routine and non-routine work and specialized operations required and described herein. The Contractor is expected to be familiar with the extent of systems to be maintained under this contract and the equipment necessary to provide the specified work response. Failure to have adequate equipment to perform the work shall not be sufficient grounds for the delay of routine or other authorized work. The equipment shall be owned or under long-term lease to the Contractor, and available at all times for the Contractor's use.

The Contractor's vehicles, including but not limited to the minimum special equipment listed herein, shall be in good working condition and physical appearance (no rust) to be suitable for providing timely response for systems' maintenance and to represent a quality product to the motoring public. All vehicles and equipment used by the Contractor shall conform to all applicable laws and the Department safety and traffic control requirements. The Contractor is strongly urged to have six (6) attenuators in his fleet for the safety of repair crews.

Prior to the start of the contract period, the Contractor shall have all vehicles and equipment staged and available for inspection by the Engineer. The Engineer shall provide not less than five (5) calendar days advance notice to the Contractor of the desired inspection date.

All Contractor vehicles and equipment shall be clearly identified by a decal with the Contractor's name, location, and telephone number. The decal shall be readily visible on the exterior sides and rear of each vehicle. Removable magnetic signs or similar non-permanent identification is not permitted at any time. Sub-Contractor vehicles shall be held to similar requirements.

3.15.2 VEHICLES FOR TRAFFIC SIGNAL PATROLMEN

These required fleet vehicles shall have no more than 60,000 certified odometer miles as of the beginning of the Contract, January 1, 2011. If this Contract is renewed for a second year, all required fleet vehicles shall have no more than 110,000 certified odometer miles as of January 1, 2012.

Truck Specifications: (minimum standards)

- 80% of fleet shall have Extended Cab
- Utility Body with Locking Storage
- Air Conditioning
- Two internal power source jacks (for cellular and PC use)
- Strobe warning lights
- Spot light
- Directional Light Bar (all new purchases to be equal to or better than Federal Signal Corp Model SAE-W-91 with Control Unit equal to or better than Federal Corp. Model SMC5 B)
- 10 ft. ladder

Vehicle Equipment (per vehicle)

- One (1) Digital camera or camera phone
- One (1) For all Patrolmen Only:
- One (1) Lap-Top PC, approved or better than described in Article 10.16.3, and shall include: Carrying case, power cords to run in vehicle, and capable of operating all applications/software as required for the Traffic Signal system
- One (1) EDI Malfunction Management Unit (MMU 16E or better)
- One (1) EDI Conflict Monitor
- Three (3) TS2 Bus Interface Unit
- One (1) Cell-Phone Interface for PC (Systems Trucks)
- One (1) 3-Point Ground Tester
- One (1) Amp-Volt Meter
- One (1) Loop Analyzer Model ILA-550
- One (1) Conduit-Cable Locator
- One (1) Light Source for Fiber Cable
- One (1) Audible tester for Fiber Cable (System trucks)
- One (1) Emergency Pre-emption Emitter
- One (1) Fish Tape – 100 ft.
- One (1) Measuring Wheel
- One (1) ASC/2 Controller
- One (1) ASC/3 Controller
- One (1) EPAC TS2 M40 Series Controller
- One (1) EPAC TS1 M40 Series Controller
- One (1) Eagle M50 Series Controller
- One (1) Load Switch
- One (1) Electric Drill – ½ chuck
- One (1) Shovel
- Eight (8) Stop Signs
- Eight (8) Traffic Cones
- Two (2) Lane Closure Signing

Equipment as Necessary:

- Mapping Grade Handheld GPS (when mapping equipment as described herein)
- Loop Amplifiers (shelf & rack)
- Loop Splicing Equipment
- Cabinet Keys & Locks
- Relays, Fuses, Circuit Breakers
- Work Lights

Signal Heads
Pedestrian Heads
Pedestrian Pushbuttons
Service Door Covers
Visors
Backplates
Bulbs
Cabinet Logos
Bolt Cutters
Graffiti Removal Solvent
Extension Cord, 100 ft.
Set of Tools
Handhole Cover
Cable, Uniduct
Cabinet Fan, Filter
Cabinet Thermostat
Cabinet Silicone
Caulk
Duct Seal

3.15.3 VEHICLES FOR SURVEILLANCE SYSTEM PATROLMEN, MANAGER, & TRAINEE

The vehicle mileage requirements shall be as specified in 3.15.2.

Truck Specifications (minimum requirements)

- Minimum 3/4 Ton with Extended Cab
- Utility Body with Locking Storage
- Air Conditioning
- Two internal power source jacks (for cellular and PC use)
- Strobe warning lights
- Spot light
- Directional Light Bar (all new purchases to be equal to or better than Federal Signal Corp Model SAE-W-91 with Control Unit equal to or better than Federal Corp. Model SMC5 B)
- 10 ft. ladder
- Three (3) trucks shall be equipped with aerial tower capable of 12.2M (40 ft.) working height to reach Dynamic Message Signs or Advanced Systems Equipment.

Vehicle Equipment (per vehicle)

- One (1) AC generators capable of 40 amp output to power DMS sign
- One (1) Digital Camera
- Eight (8) Stop Signs
- Eight (8) Traffic Cones
- Two (2) Lane Closure Signing
- One (1) Loop Analyzer Model ILA-550
- One (1) Lineman's test set, Harris Dracon TS-21x89
- One (1) Digital multimeter, true RMS multimeter, with case
- One (1) Tektronix TX3 or latest version
- One (1) Wide band scope with case equal to or exceeding Halcyon 704A-200 or W & G VF-1
- One (1) Digital AC clamp on meter with case equal to or Exceeding Fluke Model 30 or latest
- One (1) Breakout box with case equal to or exceeding Black Box Model SAM232-6S
- One (1) Hand held digital Oscilloscope equal to or exceeding Tektronix (THS710A) with spare battery and case or Latest version
- One (1) Wide band TIMS/Signaling test set equal to or exceeding

- One (1) Halcyon 704A-400
- One (1) Pipe and cable locator equal to or exceeding Nilsson Pipe and Cable Locator Model #715 with Nilsson 12 volt
- One (1) Rechargeable battery Model # 110A or latest version
- One (1) Clamp on ground resistance meter equal to or exceeding AEMC Model #3700 or latest version
- One (1) Major megger
- One (1) Lap-Top PC, equal to or exceed Panasonic Tough Book 30 with the following options minimum, Intel Core 2 Processor with vPro technology SL9300, 6MB L2 Cache Processor Speed, 1.6GHz, 800MHz FSB, MIL-STD-810G compliant, moisture and dust proof design, with wide area wireless and GPS capable, 13.3" 1024 x768 (XGA) daylight readable LCD display, 2048MB DDR SDRAM minimum, 160GB removable Hard Drive, Combo drive (DVD-ROM/CD-RW), 4 GB USB 2.0 Flash Drive, External USB Video interface adaptor with s-video in, composite in, and antenna in, backlit keyboard, GPS receiver, Internal Wireless Card, Licensed copy of Windows Vista, Licensed copy of Microsoft Office 2010 installed, Licensed copy of Norton 360 version 4.0 installed, Internal Mouse, PCMCIA Modem Network card (built in), Carry Bag, and power cords to run in vehicle, and capable of operating all applications/software as required for the Surveillance System including PC to cellular interface loaded with latest Skyline DMS Maintenance software, TSC DMS portable sign control software (PSCP) by Telespot, latest remote radar sensor software by EIS and Wavetronix, Latest 3M Canoga microloop software, Virtual keyboard program LTC 5138 by Philips (Bosch) and IDOT Springfield speed and count station software, Internal Modem and Modem configuration software, Required Interfaces: Serial: D-sub 9 pin, USB: 4 pin, 10/100/1000 Ethernet RJ45, Lithium Ion Battery, AC Adapter, Battery Charging time: minimum 5 hours off, 8.5 hours on, 2nd battery pack. Each computer shall be equipped with the following cable/adaptor combination 50' DB 9 male to female serial extension cable, 6' DB9 male to female serial cable, DB 9 null modem adaptor male to female, DB 9 mini male to male gender changer, DB 9 mini female to female gender changer, 15' DB 9 female to DB 25 male modem cable.

3.15.4 VEHICLES FOR SYSTEM MANAGERS, TS, SCADA AND ADVANCED SYSTEMS SPECIALISTS

The Contractor shall provide the System Managers, the Traffic Signal Specialist, the SCADA and Advanced Systems Specialist with a ¾ Ton Extended Cab Truck or SUV type vehicle, either of which shall have no more than 75,000 certified odometer miles as of the beginning of the Contract, January 1, 2011, or no more than 125,000 certified odometer miles as of January 1, 2012. The vehicles shall be equipped with strobe lights, air conditioning, two internal power source jack for cellular and PC use, and a directional light bar which meets the specifications for TS Patrol trucks (if street work is performed) and one (1) digital camera.

Equipment for System Managers and TS Specialist Vehicle:

- One (1) Lap-Top PC, Pentium 4 Processor, minimum 2.66GHz, 15" XGA TFT Display, 512MB Shared DDR SDRAM, 30GB Hard Drive, 24x CD Burner, Internal Wireless Card, Licensed copy of Windows XP Professional, Internal Mouse, PCMCIA Modem Network card (built in), Carry Bag, and power cords to run in vehicle, 2 years old or newer
- One (1) Digital Camera

Equipment for TS Specialist Vehicle:

- One (1) Portable PROM Programmer Dataman 54 or equivalent
- One (1) O.T.D.R., Siecor Model 340 or equal with necessary modules capable of testing both single-mode and multi-mode fiber cable
- One (1) CD Writer which transcribes 3 ½ disk onto blank CD

One (1) Digital Camera

Equipment for SCADA Specialist Vehicle:

One (1) Lap-Top PC, Pentium 4 Processor, minimum 2.66GHz, 15" XGA TFT Display, 512MB Shared DDR SDRAM, 30GB Hard Drive, 24x CD Burner, Internal Wireless Card, Licensed copy of Windows XP Professional and Microsoft Access, Internal Mouse, PCMCIA Modem Network card (built in), Carry Bag, Modem configuration software (Telix/ Reflections), MOSCAD Toolbox firmware, MOSCAD System Tools Suite (STS) firmware, Tesco Workbench Firmware, Intrac MRTU Firmware, and power cords to run in vehicle

One (1) Digital Camera

3.15.5 VEHICLES FOR TS SYSTEM/RAILROAD ASSISTANT AND SCADA SPECIALIST TRAINEE

The Contractor shall provide the TS System/Railroad Assistant and SCADA Specialist Trainee, a truck or SUV type vehicle, either of which shall have no more than 75,000 certified odometer miles as of the beginning of the Contract, January 1, 2011, or no more than 125,000 certified odometer miles as of January 1, 2012. The vehicles shall be equipped with strobe lights, air conditioning, two internal power source jack for cellular and PC use, and a directional light bar which meets the specifications for TS Patrol trucks (if street work is performed).

Equipment for TS System/Railroad Assistant Vehicle:

One (1) Lap-Top PC, Pentium 4 Processor, minimum 2.66GHz, 15" XGA TFT, 2 years old or newer

Equipment for SCADA Specialist Trainee Vehicle:

One (1) Air Pressure Calibrator Meri-Cal EE33 with kit or equivalent

3.15.6 PS SPECIALIST, PS CREW AND LIGHTING SYSTEM NIGHT-PATROLMAN

The Contractor shall provide the Pump Station Specialist an extended cab truck, and the Pump Station Crew personnel and Lighting Night-Survey Patrolman a regular cab or extended cab truck. All trucks shall have no more than 75,000 certified odometer miles as of the beginning of the Contract, January 1, 2011, or no more than 125,000 certified odometer miles as of January 1, 2012. The vehicles shall be equipped with strobe lights, air conditioning, two internal power source jack for cellular and PC use, and a directional light bar which meets the specifications for TS Patrol trucks (if street work is performed).

All vehicles shall be equipped with one (1) digital camera or camera phone. The Lighting Night-Survey Patrolman vehicle shall also be equipped with a spot light.

Equipment for PS Specialist Vehicle:

One (1) Lap-Top PC, Intel Core 2 Duo Processor, minimum 1.6GHz, 15" Display, 2GB Shared DDR SDRAM, 250GB Hard Drive, CD Burner, Internal Wireless Card, Licensed copy of Windows XP Professional and Microsoft Access, Internal Mouse, PCMCIA Modem Network card (built in), Carry Bag, Modem configuration software, power cords to run in vehicle, and email service

One (1) Phase Rotation Indicator

One (1) RPM Strobe

One (1) Megger

One (1) Multimeter

One (1) Digital camera

3.15.7 VEHICLE FOR ADVANCED SYSTEMS FIELD TECHNICIAN

The vehicle mileage requirements shall be as specified in 3.15.2.

Truck Specifications (minimum requirements)

- Minimum 3/4 Ton with Extended Cab
- Utility Body with Locking Storage
- Air Conditioning
- Two internal power source jacks (for cellular and PC use)
- Strobe warning lights
- Spot light
- Directional Light Bar (all new purchases to be equal to or better than Federal Signal Corp Model SAE-W-91 with Control Unit equal to or better than Federal Corp. Model SMC5 B)
- 10 ft. ladder
- Aerial tower capable of 12.2M (40 ft.) working height to reach Advanced Systems Equipment

Vehicle Equipment (per vehicle)

- One (1) AC generators capable of 40 amp output to power DMS sign
- One (1) Digital Camera
- Eight (8) Traffic Cones
- One (1) Digital AC clamp on meter with case equal to or Exceeding Fluke Model 30 or latest
- One (1) Lap-Top PC, Intel Core 2 Duo Processor L7500, 4MB L2 Cache Processor Speed, 1.6GHz, 800MHz FSB, MIL-STD-810F compliant, moisture and dust proof design, with wide area wireless and GPS capable, 13.3" 1024 x768 (XGA) transmissive, daylight readable TFT active matrix color LCD display, 1024MB DDR SDRAM minimum, 80GB removable Hard Drive, Combo drive (DVD-ROM/CD-RW), 8 GB USB 2.0 Flash Drive, External USB Video interface adaptor with s-video in, composite in, and antenna in, backlit keyboard, GPS receiver, Internal Wireless Card, Licensed copy of Windows XP Professional, Internal Mouse, PCMCIA Modem Network card (built in), Carry Bag, and power cords to run in vehicle, capable of operating all applications/software as required for the Advanced System equipment, virtual keyboard program LTC 5138 by Philips (Bosch), RS Log; CS 5000 software, Allen Bradley PLC-5 software, RS View Software, and Harris MegaStar software.

Required Interfaces: infrared: 4mbps IrDa, Serial: D-sub 9 pin, Parallel: D-sub 25 pin, USB: 4 pin, 10/100/1000 Ethernet RJ45, Lithium Ion Battery, AC Adapter, Battery Charging time: minimum 5 hours off, 8.5 hours on, 2nd battery pack. Each computer shall be equipped with the following cable/adaptor combination 50' DB 9 male to female serial extension cable, 6' DB9 male to female serial cable, DB 9 null modem adaptor male to female, DB 9 mini male to male gender changer, DB 9 mini female to female gender changer, 15' DB 9 female to DB 25 male modem cable.

3.16 EQUIPMENT FOR MAINTENANCE OPERATIONS

The following is a list of equipment used by contractors on prior EMC contracts, which can be used as a guide for equipment as necessary on this Contract.

- Arrowboard
- Augur, Airhammer
- Boat, (for accessing navigational light outages)
- Cable Plow
- Compactor, Tamper
- Compactor, Air
- Crane (Under 20 Ton)
- Crane (20 Ton)
- Drill, Boring 125 HP
- Drill, Boring 50 HP
- Drill, Boring 37.5 HP
- Generator 6.5 HP (small)
- Generator 13 HP (large)
- Joint Sealer, Loop
- Pavement Breaker
- Pump, Water (gas) 2"
- Pump, Water (gas) 3"
- Pump, Water (diesel) 6"
- Saw, Concrete
- Tractor, Backhoe
- Tractor, Skid Loader
- Trailer, Cable Rack
- Trailer, Flat Bed
- Trencher 40 HP Wheelmounted
- Trencher 57 HP
- Truck, Aerial Bucket 30'
- Truck, Aerial Bucket 55'
- Truck, Aerial Bucket 70'
- Truck, W/Augur
- Truck, Cable
- Truck, W/Crash Attenuator
- Truck, Dump
- Truck, Fiber Optic Splice
- Truck, Loop w/Saw
- Truck, Pick-Up
- Truck, Semi
- Truck, Stakebody Flatbed
- Truck, PS Equipment, with 10,000 lb winch, generator 4500 watt continuous at 120 volts, combination welder, and ability to operate a hydraulic pump

3.17 CONSTRUCTION TEST EQUIPMENT

The Contractor shall own and maintain test equipment, available for specialized maintenance testing at all times by Contractor's work crews, and given two (2) hour notice, for the Engineer's use in inspecting the Contractor's work. All equipment shall be owned or under long-term lease to the Contractor.

The Contractor is expected to maintain all test equipment, in accordance with the manufacturer's specifications at all times, including certified calibration by a responsible test lab. The equipment shall have the test lab's most recent calibration ticket attached.

The minimum quantities and types of required test equipment, as listed below, shall be ready for inspection by the Engineer by January 2, 2011.

At the Pre-Construction Meeting, the Contractor shall submit to the Engineer for approval an itemized list of all test equipment, a manufacturer's product data sheet for each item, and copies of each instrument certification calibration.

- One (1) Lineman's Test Set
Equal to Harris Dracon Model 7522A
- One (1) Time Domain Reflectometer with case
Equal to Tektronix Model 1502B (metric version)
with battery pack and chart recorder
- Two (2) Signal Field Strength Meter with case
Equal to POTOMAC INSTRUMENTS, Model FIM-21
- One (1) RUSTRAK RANGER II POWER LOGGERS
Model RR2-123 or equal, with Communications Module
for Recording, Monitoring, and Reporting. Multimeters with
Current Probe, and Thermal Probe.
- Twenty-eight(28) AMPROBE & DIGITAL MULTIMETERS
Equal to FLUKE latest model
- One (1) HOTSPOT LOCATOR
Equal to Probe Eye 6EMITST2LC Locator with battery & case
- One (1) LINEMANS TEST SET
Equal to Harris Dracon Model TS-21x89
- Three (3) BREAKOUT BOX WITH CASE
Equal to Black Box Model SAM232-6s
- Two (2) HANDHELD DIGITAL OSCILLOSCOPE
Equal to Tektronix (THS710A) with spare battery, case and charger
- Two (2) PIPE AND CABLE LOCATOR
Equal to Nilsson Pipe and Cable Locator, Model 715 with
Nilsson 12 Volt Rechargeable Battery, Model 110A or latest
- One (1) DIGITAL TACHOMETER (Latest Model)
- One (1) SURVEY RODS-LEVEL
Round Fiberglass, 25' – 5 Section, D electric Certified

- Eleven (11) 4 CHANNEL GAS DETECTOR
- Two (2) TRIAXIAL GAUSS METER, equal to Bell Technologies, Model 4080 or better
- One (1) Coaxial Cable Tester, equal to TWA Communication Model #62-204
- One (1) Infrared thermometer, equal to Fluke 60 series or equivalent
- Two (2) DIGITAL LOW RESISTANCE OHMMETERS, which meet the following requirements:
Ranges: 2, 20, 200, 2000, and 20000 Ohms
Resolution: 0.5×10^{-3} x range
Accuracy: $\pm (0.2\% + 2)$
Power Source: Line Voltage/Battery
Accessories: Ground Test Kit
Make: AEMC Digital Ground Resistance Tester or approved equal
- Two (2) DIGITAL MULTIMETERS, which meet the following requirements:
Voltage AC: Maximum Voltage: 1,000 V
Basic Accuracy: $\pm (1.0\% + 4)$
Resolution: 0.1mV X Range multiplier
Voltage DC: Maximum Voltage: 1,000 V
Resolution: 0.1 mV X Range Multiplier
Basic Accuracy: $\pm (1.5\% + 3)$
Resistance: 600 Ohms – 50 M Ohms
Power Source: Rechargeable Battery
Make: Fluke 80 Series DMM or approved equal
- Two (2) FALL-OFF-POTENTIAL GROUND RESISTANCE TESTER, which meets the following requirements:
Ranges: 2Ω to $20k\Omega$
Resolutions: 0.5×10^{-3} x range
Accuracy: $\pm (2\% + 1)$ from 10% to 100% of range
- Four (4) INSULATION RESISTANCE TEST EQUIPMENT, which meets the following requirements:
Mega Ohm Range: Resistance: 0 to 2,000 M Ohms
Voltage: 250, 500, 1000 V dc + 30 % Max.
Accuracy: +/- 1.25 % of full scale deflection on 2.8" arc length
Lo- Ω resistance Resistance: 0 to 5,000 Ohms@ 3 V +/- 0.2 V
Voltage: 0 to 600 Volts
Accuracy: +/- 3 % of reading
Power Source: Hand Crank/Line/Battery
Make: Megger or approved equal
- Two (2) AMPROBES, which meet the following requirements:
Current AC
Range: 1 A - 600 A, AC 1 A - 1,000 A, DC
Lowest: 0.5 A 0.5 A
Accuracy: 2 % + 0.5 A 2 % + 0.5 A
Useable Frequency: DC – 10 KHz
Output Levels: 1 mV/A
Power Source: Rechargeable Battery
Make: Fluke 80-i1010 or approved equal
- Three (3) CLAMP-ON GROUND RESISTANCE METER, which meet the following requirements:

Range	0.1Ω	to	1.0Ω	to	50Ω	to	100Ω	to	200Ω	to	400Ω	to	600Ω	600Ω	to
	1.00Ω		50Ω		100Ω		200Ω		400Ω					1200Ω	
Resolution	0.01Ω		0.1Ω		0.5Ω		1Ω		5Ω		10Ω			50Ω	
Accuracy	±(2%+2)		±(1.5%+1)		±(2%+1)		±(3%+1)		±(6%+2)		±(10%+1)			±(25%+1)	
Current Measurement	Auto-Ranging 1mA to 30.00 Arms														
Range	300 mA, 3A, 30A														
Resolution	1 mA, 0.001 A, 0.01 A														
Accuracy	± (2.5% + 2)														
Power Source:	Battery														
Make:	AEMC 3700 Clamp-On Ground Resistance Meter or approved latest equal model														

One (1) Set Fiber Optic Light Source and Detector for testing both SM and MM fiber optic cables,
 Noyes Model SMLP 5-5 or equal

ARTICLE 4.0 – ROUTINE MAINTENANCE WORK AND PAYMENT

4.1 CONTROL OF WORK

Except as notified in writing by the Engineer, the Contractor is automatically authorized and required to perform routine maintenance work, which includes response, scheduled work and preventative maintenance actions on all state maintained electrical Systems in a manner prescribed in this Contract. All labor, personnel vehicles, and construction equipment necessary for the routine maintenance work described herein is included in the routine maintenance bid items.

Unless certain work is specifically described herein to be non-routine work, all work required by the Contract shall be incidental to the requirements of routine maintenance. Specific items of routine maintenance work are described under the description of work for each respective system. General requirements in support of routine maintenance are included in, but not limited to, this article. Article 6.0 Advanced Systems contains communication and service equipment for all systems listed herein that shall be included part of each bid item.

The Engineer appointed for this Contract will be responsible for the control of the work in conformance with Section 105 of the Standard Specifications for Road and Bridge Construction, and contract Special Provisions.

The Contractor shall continuously watch for System elements that are malfunctioning or in need of replacement. Malfunctioning equipment shall be repaired or replaced as part of routine maintenance. The Contractor shall, however, submit a Contractor Advisory, per Article 4.17.1, for items which are a safety risk or prone to imminent failure, and receive non-routine payment for the material portion of the repair.

The Contractor shall document to the Engineer that the various items of equipment at all locations perform properly, that maintenance operations for the respective installations and systems prescribed by this contract are not to be interrupted, that maintenance completion dates as specified or agreed are met, and that repair work as performed on system equipment meets all applicable codes and IDOT requirements.

The Contractor is responsible to perform maintenance under this Contract which prevents operational problems, minimizes trouble calls, safeguards electrical safety, promotes operational safety and which prolongs the operations life of installed systems. Some of these maintenance activities will be initiated by the Engineer, some will be jointly developed between the Contractor and the Engineer, and some are expected to be routine maintenance obligations of the Contractor.

The Engineer may make frequent investigations of Contractor work and periodic inspections of the respective systems and installations to determine if all maintenance operations are being performed satisfactorily and in the manner specified in the Contract. The Contractor shall provide safe access to any part of the systems for IDOT inspectors.

4.2 PRIORITY OF WORK

The following top priorities of work, in the order listed, shall take precedence over work for others and other work on this contract, unless permitted, on a case-by-case basis, by the Engineer. The response times to these situations shall be as defined elsewhere herein.

It is not necessary for the Contractor to obtain approval to utilize dedicated personnel, as specified herein, to respond to these top priorities.

- Railroad/Vehicle Conflict
- Railroad Interconnect Problem/Outage
- Traffic Control Conflict
- Traffic Obstruction
- Electrical Hazard

- Power Outage
- Water on Pavement
- Hazardous Materials on Highway
- Power Center Outage
- Other incidents as specifically alerted by the Engineer

4.3 CONTRACTOR EMERGENCY RESPONSE

When equipment failures do occur due to unforeseen events, motorist caused damage, or from any cause whatsoever, time is of the essence for Contractor personnel to arrive at the scene, shut-down or safely isolate any potentially hazardous electrical condition, clear the pavement of any equipment debris resulting from the damage and take corrective measures to assure the safety of the motoring public, and coordinate the efforts to restore normal traffic operations.

The Contractor's response shall include not only reporting to the location of an incident or trouble, but also timely immediate action as prescribed for the various systems herein, or as required by the situation to mitigate immediate hazards and effect necessary temporary and/or permanent repairs and restoration of electrical systems.

It is an objective of this Contract to have the Contractor responds to trouble calls as quickly as possible after obtaining an acceptable amount of information. The Contractor shall dispatch patrol personnel for response after being provided with a main route and a cross street by the ComCenter or other police/municipal agency.

Normal response time shall be one (1) hour, with temporary service restoration in four (4) hours, and permanent equipment repairs in seven (7) days. The systems articles herein discuss specific response time requirements. (Also refer to ticket documentation requirements herein.)

Certain equipment is critical to the EMC and requires immediate response and immediate corrective action, including failures of fiber optic equipment, servers, distribution equipment, or intrusion alarms, all non-scheduled power outages, and other equipment items as specified in systems articles herein.

All damaged equipment, determined by the Contractor not to be re-usable, shall be removed from the state highway right-of-way within twenty-four (24) hours from the time of the notification of the incident, exclusive of Saturdays, Sundays, and Holidays, and taken to the Contractor's shop area.

After inspection by the Engineer, ownership shall be conveyed to the Contractor of the non-re-usable equipment via a state scrap transfer log. (Review disposal of scrap herein.) Any damaged concrete poles, broken concrete or other such refuse and debris generated from the motorist caused damage shall be disposed of by the Contractor.

All expressway, shoulder, or lane closures required for clearing, and installing temporary or permanent repairs shall be in conformance with existing Departmental standards governing lane closures.

4.4 CONTRACTOR CALL-OUT POLICY

The Contractor is required to have a Call Out policy that formalizes the 24/7 response necessary to provide continuous maintenance for systems covered under this Contract. The Contractor shall, in addition to the EMC Dispatch Center Supervisor, appoint a System Manager or Specialist to be on-call (on a rotating basis) after the normal workday hours and on weekends, to serve as an Emergency Response Coordinator, to prioritize the emergency response for all electrical systems. In this capacity the Emergency Response Coordinator shall coordinate work with the EMC Dispatch Center Supervisor.

The Emergency Response Coordinator shall have the authority to call out additional personnel for dispatching or patrol duties. During storms or other emergency situations, the EMC Dispatch Center Supervisor and all EMC dispatchers shall be responsible to the Emergency Response Coordinator (or the Project Manager, if in attendance at the EMC Dispatch Center).

Under storm conditions, emergency situations or other special circumstances requiring the setting of priorities from among system needs requiring immediate corrective action, which go beyond the Contractor's immediate ability to respond, the assigned on-call System Manager (Emergency Coordinator) shall set response priorities in such a manner as to minimize hazard and inconvenience to the public and otherwise optimize the effectiveness of the contractor's forces, but only, after first initiating the callout of additional forces in sufficient number to address the situation. The Contractor shall communicate and coordinate with the Engineer in such situations.

The Engineer reserves the authority to re-direct the Contractor's work priorities in response to emergency situations, potential hazards, contract coordination and incomplete or deficient work and the Contractor will be allowed no additional compensation for priorities so redirected.

4.5 SPECIAL RESPONSE SITUATIONS

All special response incidents shall be documented with an EMCMS Ticket.

4.5.1 UNAUTHORIZED ACCESS OR TAMPERING OF IDOT PROPERTY

If the Contractor sees an unauthorized individual at a site he shall radio the EMC Dispatch Center to call for police assistance, before confronting an individual.

4.5.2 VANDALISM

If the Contractor arrives on the scene of major vandalism to IDOT property, the Engineer shall be notified to determine if a police report is necessary. Photos of major damage shall be taken by the Contractor and forwarded to the Engineer within 24 hours. Following incidents of tampering, vandalism, or theft, the Contractor shall notify the local police agency so they may more frequently monitor the area.

4.5.3 INTRUSION AT FACILITIES AND/OR THEFT OF IDOT PROPERTY

If an entry alarm is received, the EMC Dispatch Center shall dispatch a Patrolman to the scene. If a break-in is confirmed, the Patrolman shall notify the IDOT ComCenter who shall dispatch Police to the area, and notify the IDOT Engineer(s) assigned to that facility. The Patrolman shall wait for the IDOT representative to arrive on the scene and make thorough inspection of the facility to ascertain if anything is missing or damaged, before the Patrolman files an official police theft report.

The Patrolman shall take photos of the damage and radio all information to the EMC Dispatch Center so as a Ticket may be created. The EMC Dispatch Center shall obtain a copy of the official police report, copies patrolman's photos and police report shall be submitted to the Engineer as soon as possible.

When, in judgment of the Engineer, damage or loss of system equipment is the result of extensive, specific theft activity affecting continuity of service, the Engineer may authorize non-routine maintenance payment of all or a portion of the permanent repair work, using contract pay items wherever applicable. The potential for the permanent work authorization, however, shall in no way relieve the Contractor from the responsibility to promptly respond and perform repairs.

4.6 LOCATING CABLE OR OTHER COMPONENTS OF IDOT SYSTEMS

To prevent damage and facilitate work by others, the Contractor shall promptly respond to Department calls requesting a locate of state owned electrical systems, cables or components at all locations and/or facilities.

The Contractor is required to perform a locate of state owned underground cables or any other components, one time for each system location, per project or contract, as requested by the general contractor of the construction project, before or after the transfer of maintenance responsibilities. Each request may involve multiple locations where separated electrical systems are involved. Markings shall be given with a horizontal tolerance of one foot to either side.

4.7 PROVIDING SYSTEM SERVICES

Upon request of the Engineer, the Contractor is required to provide trained personnel for the following miscellaneous routine maintenance work:

- Provide system access to utility workers or inspectors approved by the Department
- Provide system access for other contractors and consultants who have approved contracts to work on IDOT equipment
- Conduct an immediate System or component inspection upon notice of the Engineer
- Provide labor, transportation, and equipment, to assist IDOT inspectors in their inspection of any portion of a System(s)
- Provide additional special patrols, inspections, and tests to confirm proper system equipment operation
- Collect information to analyze the nature of repetitious or intermittent system malfunctions
- Travel to a designated location/installation to determine ownership, take photos of the requested area, and email photos and information back to the Department (response required within four (4) hours of request, unless directed otherwise).
- Travel to any system designated location/installation and take GPS coordinates reading per specifications as listed in Article 10.22
- Travel to the site of a hazmat spill to oversee proper pump station operations (response required within one hour of request)
- Provide Patrolman for monitoring (stand-by time) of hazardous or emergency situations

4.8 GENERAL MAINTENANCE WORK

All maintenance activities, equipment repairs and/or replacements and all associated work as found necessary for the proper maintenance of the systems as described herein shall be considered as part of routine maintenance, except as otherwise noted.

All equipment shall be maintained in accordance with manufacturer specifications and recommendations. Routine maintenance equipment service schedules and work shall be executed in accordance with equipment operations and maintenance (O & M) manuals unless otherwise stated herein.

Permanent repairs shall be started promptly following emergency temporary repairs, and shall be continued insofar as possible without interruption, until completion. If a permanent repair delay is due to "parts on order", the Contractor shall furnish the corresponding material requisition and purchase order for those parts or components of the system required to complete the repair.

The Department retains ownership of all damaged equipment until a state scrap transfer log is signed by the IDOT Inspector. (Refer to state scrap provisions as stated herein.)

All graffiti, including advertising decals, found on system equipment shall be removed within one (1) working day.

Following repair work, the associated area restoration shall be equal to or better than the original area condition. For example, if the soil/sod has been disturbed during the course of his work, the Contractor shall re-grade the surface work area with black dirt, placing seed or sod.

At the request of the Engineer, the Contractor shall perform maintenance on equipment not maintained by him at contract unit prices, or if approved by the Engineer, at an agreed price.

At the Engineer's request the Contractor shall inspect, investigate and provide preliminary sketch and layout with measurements, dimensions and connections of equipment, components and material for work to be performed under routine and/or non-routine maintenance. The sketch shall be provided within five days of the Engineers request.

4.9 REPAIR OF DAMAGED OR MALFUNCTIONING SYSTEM EQUIPMENT

4.9.1 GENERAL REQUIREMENTS

The Contractor is required, under routine maintenance, to clear site for safety, provide immediate corrective provide immediate temporary repairs, provide timely permanent repairs, and replace where necessary new parts or equipment for all state maintained system equipment found damaged or malfunctioning for any reason, regardless of the type of damage or who caused the damage, unless otherwise directed by the Engineer. Examples of damage include vehicular caused damage, third party damage, vandalism, natural causes, or incidental damage on or affecting system equipment as caused by the failure or the fault of utility company equipment.

Permanent repairs are also paid through routine maintenance, unless specified elsewhere herein, and shall be completed within seven (7) calendar days, or as specified in system articles herein. All responses and work on system equipment must be documented on an EMCMS ticket.

Damaged equipment parts and materials shall be replaced with new equipment, previously approved by the Engineer, in equal quantities, which shall be identical to the original elements except as otherwise specified herein, or permitted by the Engineer. Materials, repair methods and/or equipment replacements shall be suitable for the intended use per specifications and Standards as listed in Article 12.0 and contract requirements herein. In some cases failed equipment under warranty will need to be shipped back to the manufacturer.

The Contractor shall provide components equal or better than the failed devices or equipment for repairs or replacement work, When parts must be ordered from a vendor the Contractor, within 48 hours of order placement, shall provide the Engineer via scanned email the purchase order and vendor information showing the expected arrival date. The Contractor shall submit all orders in the monthly routine work submittal book for materials on order that effect equipment operation and the safety of the motoring public. Failure to provide the information as requested will result in liquidated damages.

All expressway, shoulder, or lane closures required for the response and repair of damaged System equipment is routine maintenance work and shall be in conformance with existing Departmental standards governing lane closures. (Review Article 3.0 for Traffic Control information.)

Whenever the Contractor replaces, installs, or modifies equipment or material under this Contract through routine or non-routine maintenance work, the record drawing(s) shall be modified to reflect the changes and shall be submitted monthly in the routine work submittal book.

4.9.2 REPAIRS TO EQUIPMENT DAMAGED BY DEPARTMENT PERSONNEL

The Contractor shall abide by requirements of Article 4.9.1, however, when damage to system equipment has been caused by Department personnel in the performance of their assigned duties, the Contractor shall receive payment for temporary and permanent repair work necessary through non-routine maintenance where unit price items are applicable.

Upon finding damage to state property caused by IDOT personnel, the Contractor shall take a date stamped, digital photo of the damage and email to the Engineer or designated IDOT inspector.

Within twenty-four hours of the found damage, the Contractor shall contact the Engineer to establish a mutually agreed date for a field inspection to ascertain the materials and/or parts necessary for the repair. Repairs shall be completed within seven (7) days, or as specified in system articles herein.

The Department reserves the right to furnish any or all of the materials or parts for any non-routine work, so no charge for items so furnished shall be made by the Contractor. Materials or parts furnished by the Department may be from the Department's state stock inventory or from other sources available to the Department.

4.9.3 DAMAGE CAUSED BY CONSTRUCTION (3RD PARTY DAMAGE)

The Contractor shall abide by requirements of Article 4.9.1 herein, however, when damage to system equipment (Contractor maintained) has been caused by construction activity, the Contractor may invoice the offending third party for damage repairs, including clearing costs, if Engineer approval is given. Examples of third parties include contractors working under contract with IDOT, contractors working on a construction project under permit issued by the District's Traffic Permits Section or the District's Design Utility Section, or municipal and county agency workers and their contractors. Repairs shall be completed as specified in system articles herein.

3rd Party Damage Repair Documentation:

- a. Upon finding 3rd party damage to state property (not caused by departmental personnel), the first Contractor patrolman responding to the scene shall take a date stamped, digital photo of the damage and email to the Engineer or designated IDOT inspector.
- b. The Contractor shall create an EMCMS GB (general billing) ticket, noting the name of the contractor at the scene, address, contract or permit number and contact name and phone numbers.
- c. The applicable party shall be sent a written estimate of repair (or construction) costs.
- d. The Contractor shall notify the IDOT Engineer/Inspector when the work is complete and ready for inspection by submitting, in the monthly routine work submittal book, a file on each 3rd party damage (or work) incident where permanent repairs have been completed. The file shall include copies of the completed ticket, daily general billing log(s), all correspondence, and Contractor original invoice. (Note: The 3rd party invoice number shall be the same as the ticket number.)
- e. After the work has been inspected, and the Engineer has signed an approval on the original invoice, the Contractor may submit it to the third party. If the work is inspected but not approved, the unsigned invoice shall be returned with a corrective work list. Contractor shall not submit an invoice to a third party for damage to IDOT property without an IDOT approval signature.

4.9.4 WORK REQUEST MADE BY 3RD PARTY

The Contractor shall create an EMCMS WR (work request) ticket for third parties requesting legally permitted work within the IDOT right of way which is not related to the repair of system equipment damage, but for which the Contractor will receive direct payment from a third party. An example of a work request would be the relocation of a light pole for a developer. The Contractor shall obtain Engineer approval prior to the start of work. The Contractor shall follow same procedures as points c., d., and e. in Article 4.9.3.

4.9.5 DAMAGE CAUSED BY MOTORISTS

The Contractor shall abide by routine maintenance damage repair requirements of Article 4.9.1 herein for temporary and permanent repairs.

Most materials, equipment and labor for repairs are furnished by the Contractor and paid through routine maintenance bid items. The Contractor is not allowed to collect repair costs from licensed motorists or insurance companies.

When the Contractor responds to a notification of state property damaged by motorists, or damage is found upon patrol, the Contractor shall create an EMCMS MC (motorist caused damage) ticket and the first responder on scene shall take date stamped, digital photos of the damage.

The Contractor is notified that the Department requires clear, concise photos of motorist caused damage, regardless of the hour of day or night, so the camera phone used by the Contractor personnel shall be of good quality and have email and internet access for photo transmission. Liquidated damages shall be collected if there is a pattern of disregard of this requirement.

At the end of each week, the Contractor shall email to the Engineer, photos of motorist caused damage which show the Ticket number and responder call number. The email procedures shall be specified by the Engineer at the Pre-Construction Meeting. The Contractor is responsible for the email transmission of the photos and email receipt by the Department.

The Contractor shall keep a log, by Ticket number, of work crew repair information (equipment damaged and/or salvaged, equipment re-used, new equipment installed, identifying state stock or contractor parts used, and total of labor repair time and vehicles used) and enter in the EMCMS Ticket and MCHD Log as soon as possible following the repair work. The log information shall be used by the Contractor to provide motorist caused damage (MCHD) statements, upon request of the Engineer. A summary of the work crew repair logs shall be submitted in the monthly routine work submittal book noting state stock usage and cash value.

Advanced Systems

The Contractor is allowed to use materials furnished by the Department as listed in Article 6.0 for Advanced Systems motorist caused damage equipment repairs.

The Contractor shall create a Ticket, and the IDOT ComCenter shall be immediately notified when the Contractor finds motorist caused damage to expressway ramp gate sand barrels. The ComCenter will in turn notify the IDOT District 1 Bureau of Maintenance personnel who will replace the barrels and sand. The Contractor shall keep the Tickets open until the replacement work is completed.

Highway Lighting System

When any part of a light pole unit (pole, arm, luminaire, etc.) is damaged by a motorist, the Contractor is allowed to use state stock materials, if available, for the repair. At the end of each month the Department shall be credited for the materials used, in the routine maintenance monthly payment. The Contractor is responsible for an accurate state stock accounting. Refer also to State Stock documentation requirements and Routine Maintenance Payment herein.

MCHD Claims Processing

Within one week upon notification by the Department of the MCHD claims for the month, the Contractor shall create individual statements on the EMCMS from the work crew repair information for each Ticket. Each statement number shall be the same as the ticket number, and the format shall be approved by the Engineer prior to submittal. One (1) original MCHD statement and three (3) copies will be required. Once or twice a year the Contractor also will need to furnish windowed envelopes and labeling tape for MCHD files and mailings to insurance companies.

As approved by the Contractor and the Department, motorists who damage state property shall be charged the Contractor's purchase price of the repair materials or equipment, plus any mark-up as allowed per Contract Specifications and labor repair time multiplied by the determined labor rate (union labor rate as applicable) on January 1 of each year. All statements shall be signed by the Contractor to verify repair work completion per Contract specifications.

The Contractor shall submit the statements to the Engineer, normally once a month, prior to the monthly pay meeting. Occasionally the Contractor may also be required to furnish to the Department information and/or letters for insurance company claim requests, such as additional information regarding labor or repair costs, cat cuts of repair items, material purchase orders, etc.

MCHD Accounting Procedure

The Contractor is paid for repair work for motorist caused damage through routine maintenance bid items. However, as an accounting procedure the Contractor shall prepare a monthly summary MCHD statement of the total dollar amount of the monthly processed MCHD statements, and this dollar amount is deducted from the monthly routine maintenance payment to the Contractor. Approximately sixty (60) days from the date received of the MCHD monthly summary statement, the Contractor shall receive that dollar amount directly from State of Illinois Motorist Caused Highway Damage Fund.

The monthly MCHD Summary Statement shall list all the MCHD claims for the month, by ticket notification date, ticket number, claim number, and dollar amount. This summary shall be signed by the Contractor to verify repair work completion per Contract specifications. Once received by the Engineer it will be forwarded to IDOT Springfield for payment to the Contractor.

Special Payment for Damage Repairs

Motorist caused damage repair work is paid through routine maintenance and the Contractor is not allowed to collect repair costs from licensed motorists or insurance companies. In special situations, however, the Contractor may receive from the Department, an additional partial payment for permanent repairs, as follows:

- a. Where there is motorist caused damage to light towers the Contractor shall be paid for permanent repairs through non-routine maintenance, where unit price items are applicable. (Refer to Article 7.0)
- b. Where there is motorist caused damage to the fiber optic network the Contractor shall be paid for repairs through non-routine maintenance, where unit price items are applicable, or if approved by the Engineer, through agreed price.
- c. Where there is wide-spread and/or costly damage to state property, including hazmat situations, (in excess of \$25,000 in repair costs) caused by a licensed motorist, if the Contractor provides complete documentation of material purchases and labor repair costs, and the IDOT Claims Department obtains repair cost reimbursement, the Department shall make separate payment to the Contractor of the repair costs collected, after deducting the above amount and any amounts for dedicated personnel labor, non-routine pay items or agreed prices paid or state stock usage for each item or equipment. (Refer to (a) and (b) above). Note the repair costs collected by the Department may not equal the total dollar amount of the Contractor's repair invoice. The IDOT Claims Department shall have the final determination of the amount of repair costs collected.

4.10 PATROL INSPECTIONS

4.10.1 PATROL OF SYSTEMS

Routine work requirements of this Contract require patrol inspections of systems. Refer to system articles herein for specific system requirements and patrolmen duties. The Contractor shall strictly adhere to the approved routes and schedules. The patrolling of a new location accepted for maintenance shall be instituted immediately. All patrol routes are entered in the EMCMS. The Contractor is allowed until January 10, 2011 to complete entry of all patrol schedules for all systems.

The Patrolmen responding to emergency calls shall be stationed so that their travel time to arrive at any designated point of trouble shall not exceed one hour during normal weather, 24/7. Response times for specific situations are located in system articles herein.

The Contractor shall submit proposed system patrol routes, for Engineer approval, at the Pre-Construction Meeting. Any changes in patrol routes shall be submitted monthly in the routine work submittal book.

When requested by the Engineer, the Contractor shall provide a patrolman with GPS meter to collect GPS data during their patrol as specified in article 10 for all systems, equipment and locations.

4.10.2 NIGHT OUTAGE PATROL SURVEY

The Contractor shall patrol all highway lighting, sign illumination, and navigational lighting system locations, traffic signal locations with combination traffic signals and overhead lighting, and various Advanced and Extra System locations, to assure safe, operational conditions of equipment and materials, and to assure that all installations are performing at the level of service for which they are designed. The patrol survey shall include installations for which maintenance responsibility has been temporarily transferred to a construction contractor or other third party.

In addition the Contractor shall conduct a special monthly inspection of the obstruction light mounted on top of light pole "HH26" on I/B I 290 @ Western Ave., Location L1335, Cabinet "H". The power for the obstruction light is fed from a Surveillance Cabinet "G10".

Patrols shall be arranged to inspect an approximate equal number of locations, during the first three full weeks of the month, (four or five nights per week). The proposed patrol outage survey shall be presented to the Engineer, for his approval, at the Pre-Construction meeting. The Contractor shall not deviate from the schedule, unless approved in advance by the Engineer. At the request of the Engineer the Contractor shall provide the transportation for a joint inspection during the night time patrol.

The patrolman shall be provided a hand free voice activated tape recorder to record each outage found, by noting the unit number (or cabinet designation and the pole or sign's proximity to a cross-street or road). Each night the patrolman shall record his name, call number, route week, day and date and odometer reading at the beginning and end of the patrol outage survey. The patrolman shall also radio the EMC Dispatch Center to create a ticket when multiple outages or tower outages, other malfunctions or damage are noted.

The Contractor shall email the Engineer an Excel spreadsheet report of the previous night's outage survey by 10 a.m., every workday morning, following a night time patrol. The listing shall include location numbers and names, unit numbers of outages, and ticket numbers of any special problems found. The report shall be divided in separate categories, by county, for:

- 1) Highway lighting outages
- 2) Sign lighting outages
- 3) Navigation lighting outages
- 4) Advanced System outages (beacon lights on radio towers and base stations)
- 5) Extra System outages (weigh stations, weigh stations open/close signs, and rest areas)
- 6) Off-maintenance location outages

24 Hour Outage Repairs

Outage repairs for the tower beacon lights on towers, base stations, state police facilities, or the obstruction light on light pole HH26 on I/B I 290 @ Western Ave., Location L1335, Cabinet "H", shall be conducted within twenty-four (24) hours of notification or discovery. It is expected that a sub-contractor will be employed to do this relamping. This work as specified herein is paid through non-routine maintenance pay item GRB1, which shall be payment in full for all required materials, labor and equipment.

7 Day Outage Repairs

The Contractor has one week, seven (7) calendar days to repair normal outages found on the nightly outage survey. The Contractor shall repair all outages found, both those found on the patrol and those found when the cabinet is energized. In some cases this may substantially increase the number of outage repairs on a particular date. For those outages that require special lane closures, special parts, etc., the Contractor shall create a ticket and obtain Engineer's approval of the repair delay.

Documentation

The Department shall furnish the Contractor the form for the daily, weekly and final outage repair reports at the Pre-Construction Meeting. The number of patrol survey outages found and repaired by category, as well as repair crew outages found and repaired, equipment repairs made by work crew (ballast change, lamp, etc.) and ticket numbers for locations where repair work was not completed, all sorted by category, county and location, shall be reported on the weekly and final outage repair reports. Each weekly repair report shall be emailed to the Engineer within 7 days of the completion of the weekly night survey and the final report shall be received by the end of the first week of the following month. A hard copy of the weekly and final reports signed and dated by the appropriate system manager, documenting that the repair of each outage was completed in accordance with contract specifications, shall be submitted in the monthly routine work submittal book.

The night outage patrolman shall keep a historic database of outages by pole/luminaries and/or unit number and provide a separate list of repetitive outages for the repair crew prior to their workday. The repair crew shall provide the night outage patrolman with all items found and repaired or replaced by pole or unit number which shall be entered into the database. The database spreadsheet shall be submitted to the IDOT Engineer on a CD in the monthly routine work submittal book

4.10.3 RED-LIGHT RUNNING CAMERA SURVEY

The Contractor shall keep current an Excel spreadsheet list of locations with red-light running cameras, traffic signal preemption and traffic monitoring cameras. While performing patrol duties, for the duration of the Contract, the Contractor Patrolman shall make note of any red-light running camera locations and agency responsible for their installation (if known) and report the installations or removals once per month on a cumulative yearly spreadsheet using excel, to be submitted in the monthly routine work submittal book in a CD.

4.11 COORDINATION WITH ELECTRIC UTILITY COMPANIES, CONTRACTORS, AND OTHERS

The Contractor shall keep incoming power service in proper condition at all times. The Engineer shall be promptly notified by email for cases such as the planned disruption of service power to System equipment.

The Contractor shall monitor the condition of electric service wiring and equipment, telephone service wiring and equipment, natural gas service lines and accessories and water service piping and appurtenances for all systems and facilities maintained under this contract. The Contractor shall maintain contacts with the respective utilities or providers for these services and shall coordinate with the utility and the Department to assure that services are installed in a timely manner, in compliance with requirements established for the service.

The Contractor shall fully coordinate access as required for utility company or contractor inspection, modification work as applicable, repair work as necessary and other matters as necessary to assure continuity of services and proper revisions when needed.

The Engineer may require the Contractor to inspect related non-system equipment, such as Com Ed power lines, that may interfere with the functioning and/or maintenance of systems as covered in the contract.

The Contractor shall assist the Engineer with the inspection of work completed by others such as the construction and/or replacement of intermittent median walls by a construction contractor (the non-EMC) and the necessary inspection of the required electrical ducts by the Contractor.

4.12 ROUTINE MAINTENANCE TRANSFER OF MAINTENANCE RESPONSIBILITY

General Responsibilities

The Contractor shall cooperate with the Engineer and construction contractors with respect to transfers of maintenance on system elements and inspection of completed construction work for Department acceptance. The Contractor shall assist the Engineer and/or IDOT Inspectors to make equipment inspections of installations to be added or removed from routine maintenance to ascertain that the equipment and/or workmanship is in proper working order and verify equipment inventory quantities. The Engineer may request the Contractor provide new locks for system equipment at the maintenance transfer meeting. The Contractor will be provided with a list locations currently maintained in the pre-bid meeting and will also be provided an updated list on Dec 15, 2010.

There will be transfer inspection site meetings in the field. The Contractor shall attend these official joint transfer site meetings and shall fill out and sign any required maintenance transfer forms or equipment inventory forms. The Contractor shall provide the Engineer, a minimum of 24-hours in advance of the maintenance transfer meeting, the names of the Contract personnel who shall be attending the meeting.

When construction activity is complete the Contractor has the responsibility to document any new items of equipment (including new locks and key numbers) or the removal of equipment, by system, on an Excel spreadsheet which is submitted to the Engineer monthly in the routine work submittal book.

Transfer of Location Maintenance Responsibility to EMC

In examining construction work for acceptance by the Department, the Contractor shall advise the Engineer with respect to the completeness, workmanship, safety and maintainability of the installation, and the Engineer will make the final determination regarding acceptance. The Contractor is required to assume maintenance responsibility for system work accepted by the Engineer.

Transfer of Location Maintenance Responsibility from EMC

Following the site meeting, if a corrective work list has been developed, the Contractor shall be required to correct any outstanding deficiencies through routine maintenance or unless otherwise permitted by the Engineer.

Transfer EMCMS Entry

Upon acceptance of routine maintenance responsibilities or transfer of maintenance responsibilities to another entity, the Contractor representative shall radio the EMC Dispatch Center the information to immediately complete a Maintenance Transfer Log with the following information:

- Date and time of maintenance transfer
- EMC Maintenance status (ON or OFF)
- Type of maintenance or other notable information
- Name and address of Contractor
- Contact and 24/7 telephone number for the responsible Contractor
- Police agency responsible for the location

The EMC Dispatch Center shall send the completed Maintenance Transfer Log to the Engineer and applicable system Engineers, via email or fax. The Department is responsible for EMCMS transfer entry changes, ownership and pay item category changes, and the entry of new locations in the EMCMS.

If errors are found in the EMCMS the Contractor shall immediately notify the Engineer by email with the details.

Beginning January, 2011 in the monthly routine work submittal book, the Contractor Administrative Manager shall submit to the Engineer the Maintenance Transfer Summary Report, a spreadsheet noting the system, county, date of each maintenance transfer, location number, location name, pay item category, and new maintainer name and/or owner.

4.13 ROUTINE MAINTENANCE PAYMENT

Each monthly pay period shall be a calendar month. Each defined electrical system location that has been maintained under routine maintenance by the Contractor will be measured (counted) for payment based upon the quantity of "equivalent location units" or ELUs. Pay quantities for routine maintenance are arranged by individual system, but the bid ELU price applies to all systems.

Contractor personnel and/or the Contractor Administrative Manager shall work with Department personnel on the first few days of each month to reconcile the past months maintained location quantity totals as existing on the last day of the month.

To determine the monthly payment to the Contractor, the single routine maintenance bid ELU price shall be applied to the total ELUs under routine maintenance by the Contractor on the last day of the month. Those locations, which were removed from Contractor maintenance on or before the last day of the month, shall not be paid routine maintenance. The Contractor shall, however, be paid the bid ELU price for a lighting system location where only a portion of a cabinet was transferred off routine maintenance.

For year 2011 only, the payment of Advanced Systems locations within systems currently maintained under Contract 60I28 until March 31, 2011 will be calculated as follows:

The number of maintained locations for A-1, A-2 and A3a pay items as listed in the Scheduled of Prices will be multiplied by the bid ELU price for the total monthly routine payment. The monthly routine payment will be multiplied by nine (9), the total months to be maintained after March 31, 2011 to arrive at the final cost to be added in the total routine maintenance for the year.

When the Engineer has determined that all monthly routine work submittals are complete, a monthly routine maintenance letter, which authorizes payment of the prior month's routine maintenance work, and which itemizes any credits, including credit for state stock used during the past month, debits, withholding, liquidated damages, or deductions for motorist caused damage statement processing applicable to the monthly payment (also review Article 4.9.5 Damage Caused by Motorists), shall be presented to the Contractor. The Contractor shall create the monthly routine maintenance invoice from the monthly routine maintenance authorization, and bring to the monthly pay meeting.

The Contractor shall be paid monthly for work performed on locations maintained under this Contract as specified above. The Department historical ELU quantities are provided in Article 13.0.

The Contractor will be asked to take on or off the monthly maintenance of equipment and facilities during the Contract year, based upon completion of Contract 60I28, Construction and Permit work affecting locations as specified herein, or upon Engineer request. The quantity of locations in the Schedule of Prices includes off maintenance locations, and is not to be construed with locations maintained by the Contractor for payment. No payment will be made to the Contractor for locations he or she does not maintain. The Contractor shall include all associated costs and expenses as part of routine maintenance of maintained locations.

When routine maintenance work completion is severely delayed or deficient or the routine maintenance work submittal book has not been received on time, the Engineer, at his option, may delay the pay meeting, thus delaying the routine maintenance payment to the Contractor.

4.14 STATE STOCK

4.14.1 GENERAL REQUIREMENTS

The Contractor is responsible, under routine maintenance, for the storage and inventory reporting of the Department's stock of parts, materials, and equipment which is to be used exclusively for the Department's installations and systems. The Contractor shall appoint a state stock manager, who shall be responsible for the Contractor submittal of state stocks reports and shall be the Department contact for state stock transactions. This individual shall be named at the Pre-Construction Meeting. Refer also to Article 3.0 Storage Facilities.

The Contractor shall use state stock only when directed and approved by the Engineer. The Department is not obligated to furnish specific parts or equipment in state stock inventory for Contractor use. The Contractor may not use any state stock inventory for any work outside the scope of this contract.

4.14.2 DISBURSEMENT OF STATE STOCK

Upon receiving an approved state stock disbursement/receiving log from the Engineer, the Contractor is responsible for timely, safe transportation and handling to deliver designated state stock inventory from the state stock warehouse, Contractor shops or sites, or other approved state work sites within District 1, to approved Contractor or state work sites within District 1. The Contractor also shall provide all labor and equipment as necessary to relocate any IDOT equipment (stock) to new facilities as directed by the Engineer.

The Contractor shall fax the Engineer a state stock disbursement/receiving log requesting the use of state stock. The state stock disbursement/receiving log must state whether the equipment to be removed is for a routine or non-routine work project. The Contractor may not use any state stock until written approval is received from the Engineer.

4.14.3 RECEIPT OF STATE STOCK

Upon receiving an approved state stock disbursement/receiving log from the Engineer, the Contractor is responsible for timely, safe transportation and handling to pick up materials, parts, and equipment which is to be designated as state stock inventory from Contract routine work sites and locations within District 1 and deliver to the state stock warehouse, Contractor shops or sites, or state work sites within District 1.

The Contractor shall fax the Engineer a state stock disbursement/receiving log requesting delivery of items into state stock. The state stock disbursement/receiving log must state who will be delivering the items and state the project from which the items will be arriving. If the Contractor is replacing state stock items previously used for routine maintenance work, the log must clearly note the original disbursement date of the item. The Contractor may not place any items into state stock until written approval is received from the Engineer.

In order to assure that only materials in good working order and/or condition shall be placed in the state stock warehouse, the Contractor shall provide trained personnel (at minimum a helper/groundsman) to inspect the materials, separate salvage materials, and/or box/wrap/categorize the various in-coming materials at the state stock warehouse. (It is the Contractor's option to assign additional personnel including foremen, however this additional labor will not be paid by the Department.) The helper/groundsman shall be paid through routine maintenance.

If the Engineer directs the Contractor to receive materials into the state stock warehouse from construction contracts, the Contractor will be paid through routine maintenance for a total of one-hundred twenty (120) cumulative hours per year for groundsmen/helper labor and paid through non-routine maintenance for any hours exceeding one-hundred twenty (120) per year.

With Engineer approval the Contractor is allowed to take receipt of materials at the Contractors facilities, but the materials must be moved, at Contractor expense, to the state stock warehouse within five working days of the receipt of materials.

4.14.4 DISPOSAL OF SCRAP

The Engineer shall have the sole determination as to whether material (equipment) is re-usable as system equipment. Except as otherwise indicated herein, all removed items remain property of the state. The Contractor may not dispose (scrap) any materials without receiving prior approval from the Engineer in writing.

The Contractor shall fax the Engineer a state scrap transfer log requesting Engineer approval of items to be scrapped. The state scrap transfer log must state the item name/model/type, condition, and location where item was located. If after inspection the materials are determined to be scrap, the Engineer shall sign the state scrap transfer log, and convey ownership of the scrap materials to the Contractor. Upon receiving the transfer of ownership, the Contractor shall be responsible, at his expense, for the proper, legal disposal of all scrap items; materials, parts, equipment, etc. The estimated salvage value of scrap materials shall be reflected in the bid unit prices for routine maintenance items. The Contractor shall submit a copy of all state scrap logs in the monthly routine work submittal book.

All lamps removed as part of re-lamping operation, outage repairs or other authorized work shall become property of the Contractor and shall be disposed of in full compliance with Environmental Protection Agency (EPA) regulations. The EPA Rule 40 CFR, part 273, finalized in May 1995 established a guideline for the recycling of lamps and the mercury from scrapped lamps. Fluorescent, high-intensity, low pressure sodium, and other lamps bearing mercury may be classified as a potential hazardous waste.

The Contractor shall recycle removed lamps to the maximum extent possible and shall submit to the Engineer, for approval, the name and background of a qualified lamp recycling specialty service which shall be used for lamp recycling under this Contract. Over the course of the

Contract, the Contractor shall provide documentation of all lamp recycling activity to the satisfaction of the Engineer. The Contractor shall provide the names of qualified facilities certified to dispose of used lamps at the pre-construction meeting.

4.14.5 STATE STOCK DOCUMENTATION

The Contractor shall conduct an audit of the state stock inventory as of January 2, 2011. After approval signature of the principal of the company and the Engineer, the Contractor shall have full responsibility for all state stock inventory for the duration of the contract, including the EMCMS entry and reporting of use, disbursements or receipts.

The Contractor shall maintain an Excel spreadsheet, a perpetual inventory of parts and equipment used in the maintenance of the systems, as well as an EMCMS state stock inventory for highway lighting. Both reports shall include information as to the equipment/materials model/name, size, type, manufacturer, location (including all materials at the warehouse facility, shop facilities, etc.) and state of repair of all parts and equipment, as well as a record of where the prior months' stock was utilized, by staging area, category or routine or non-routine work, and ticket number or contract number if applicable.

Both monthly state stock inventory reports shall be sent to the Engineer by the 5th day of the month, prior to the pay meeting. The reports shall be signed by the person directly accountable for the accuracy of same and an officer of the firm with a statement attesting to the accuracy of the report and proper use of the inventory. The Contractor is required to retain all inventory records for a period of 5-years following the completion of the Contract.

In addition, the Contractor shall reconcile the monthly inventory as issued by the leased warehouse to the EMCMS state stock report and shall notify the Engineer of any discrepancies. Both reports and all logs shall be submitted monthly to the Engineer.

4.15 CONTRACTOR SPARE PARTS INVENTORY RESPONSIBILITIES

The Contractor shall be responsible, under routine maintenance for providing spare equipment for emergency and routine service and for overhauling equipment, to meet the response and maintenance requirements as stated herein. The material and/or equipment furnished by the Contractor shall be new, as approved by the Engineer, in equal quantities, which shall be identical to the original elements except as otherwise specified herein, or permitted by the Engineer.

The Contractor and the Engineer shall meet by December 1, 2010 to agree on the minimum quantity of equipment which the Contractor shall have in his possession at the start of this Contract. The Contractor shall submit his current inventory of spare parts for each system to the Engineer as of January 1, 2011, and submit a current monthly report of Contractor Spare Parts Inventory in each monthly routine work submittal book.

Per the Engineer's directive and/or following an inventory-related failure to meet the routine maintenance performance requirements of the contract, the Engineer may direct the Contractor to maintain a minimum quantity of specific items on hand. The additional cost of maintaining the required parts inventory shall be borne solely by the Contractor.

A shortage of any parts or equipment causing delays in the implementation of replacements or repairs shall be sufficient cause to assess liquidated damages. The Contractor shall submit anticipated schedule(s) for ordered replacement items when required for this Contract. The Engineer may inspect the Contractor spare parts inventory at any time as deemed necessary. (Review Article 3.0 for Contractor storage facility requirements.)

4.15.1 LIGHTING SYSTEM – SUGGESTED STARTING QUANTITIES

Luminaires

Qty	Item
10	HPS, 230 Volt, 200 W
10	HPS, 230 Volt, 310 W
25	HPS, 230 Volt, 400 W
10	HPS, MT, 200 W
10	HPS, MT, 310 W
10	HPS, MT, 400 W
5	HPS, 480 Volt, 200 W
5	HPS, 480 Volt, 310 W
10	HPS, 480 Volt, 400 W
10	LPS, 230 Volt, 55 W
2	HPS, 208 Volt, 400 W
3	HPS, 240 Volt, 1000 W

Cabinets

Qty	Item
2	240 Volt, 150 Amp, Asco contactor
2	240 Volt, 200 Amp, Asco contactor
2	277 Volt, 200 Amp, Asco contactor
2	110/120 Volt, 60 Amp, Asco contactor
2	240 Volt, Tork Astronomical Clock

Wire

Qty	Item
3000 Ft.	#4 Quadruplex

Poles and Arms

Qty	Item
10	11.5" BC, 32 Ft., Alum Lt Pole 8 x 4.5", .250 Wall
5	15.0" BC, 39 Ft., Alum Lt Pole 10 x 6", .250 Wall
20	15.0" BC, 45 Ft., Alum Lt Pole 10 x 6", .250 Wall
2	15.0" BC, 45 Ft., Alum Lt Pole, 10 x 6", .250 Wall, Special HandHole Location
2	15.0" BC, 55 Ft., Alum Lt Pole, 10 x 6", .250 Wall
5	15.0" BC, 26 Ft., Davit Pole
5	15.0" BC, 31 Ft., Davit Pole
5	15.0" BC, 39 Ft., Davit Pole, 38' – 7"
5	8 Ft., Truss Arm 4", 34" Rise
5	10 Ft., Truss Arm 4", 34" Rise
20	12 Ft., Truss Arm 4", 34" Rise
20	15 Ft., Truss Arm 4", 34" Rise
5	6 Ft., Single Lt Arm
10	8 Ft., Truss Arm 6", 34" Rise
2	8 Ft., Truss Arm 6", 48" Rise
15	12 Ft., Truss Arm 6", 34" Rise
2	12 Ft., Truss Arm 6", 48" Rise
20	15 Ft., Truss Arm 6", 34" Rise
15	15 Ft., Truss Arm 6", 48" Rise
5	15 Ft., Truss Arm 6", 72" Rise
5	8 Ft., Davit Arms, Twin
5	8 Ft., Davit Arm

Pole Parts

Qty	Item
------------	-------------

5	T-Base, 13-15" Top, 15-17" Bottom
5	T-Base, 11.5" Top, 15" Bottom
5	T-Base, 11.5" Top, 11.5" Bottom
5	T-Base, 15" Top, 15" Bottom
25	Breakaway Coupling Sets
25	11.5" Fiberglass Shroud
5	15.0" Fiberglass Shroud
25	11.5" Aluminum Skirt
25	15.0" Aluminum Skirt
200	Small Pole Leaves
150	Large Pole Leaves

4.15.2 PUMP STATION SYSTEM – SUGGESTED STARTING QUANTITIES

Qty	Item
6	AEGIS EPROM Chips

De-watering Pumps

3	4" Pump to de-water the PS, 480/240 volts
1	3" Pump to de-water the PS, 480/240 volts

The Contractor shall have pump(s) capable of a pumping variable head, including piping, fittings, wiring, motor switch gear, and controls to provide a complete operational pump system.

Qty	Item
3	Compressors (Gas)
3	Solenoids
1	12V Power Supply
2	Batteries
1	Battery Charger
6	120v Relays
6	12v Relays
2	Level Transducers
3	Voltage-to-Current converter (0-250mv)
3	Voltage-to-Voltage converter (0-160v)
1	Voltage-to-Voltage converter
4	SCADA panel interconnect terminal blocks, one of each type
2	MDS radios 9710B
1	Antennas (Parabolic)
2	Radio batteries
2	Radio power supplies
1	MDS diagnostics board

4.15.3 TRAFFIC SIGNAL SYSTEM - SUGGESTED STARTING QUANTITIES

Qty	Item
5	TS-I 8 phase – 12 channel cabinets and controllers
2	TS-II 8 phase -- 12 channel cabinet and controller
10	TSI and TSII controllers
2	Eagle Master Controllers
2	Econolite Master Controllers
10	Mast arms and foundation bolts of various sizes
3	Electrical service enclosures
10	Conflict monitors
40	Detector Amplifiers – rack and shelf
5	MMU's
10	BIU's
50	Traffic signal posts of various sizes
30	Signal heads of various sizes
3	Each; LED signal modules, green, red, yellow, green arrow, yellow arrow, red arrow
20	Mast arms signal head mounts
50	Mast arms port mounts
2	Controllers with Railroad Security Software (one each Eagle and Econolite)

4.16 MATERIAL AND EQUIPMENT

4.16.1 USE OF APPROVED MATERIALS

The Contractor shall clearly understand that no equipment or material shall be installed prior to approval by the Engineer and that any equipment or material installed without the approval of the Engineer is subject to removal from the right-of-way solely at the Contractor's expense. If the Contractor changes the supplier of any approved materials for the contract, a new submittal for that item must be made for review and approval by the Engineer. The Contractor shall provide free access to the Bureau of Materials personnel for inspection to insure that the approved materials are used.

The Contractor (including all supervising personnel) is expected to familiarize themselves with all requirements with respect to proper materials, methods and procedures and failure to do so will not be justifiable grounds for lack of compliance with the contract requirements.

4.16.2 SUBMITTALS FOR APPROVAL

Within 60 days after contract execution, the Contractor shall submit to the Engineer for approval, complete, approvable manufacturer's product data (for standard products and components) and detailed shop drawings (for fabricated equipment) of materials and project equipment (products) proposed for use on this Contract for both routine and non-routine maintenance. The Engineer may grant permission to delay certain submittals until the applicable work is authorized, but the 60-day requirement shall apply to all commonly used and general items.

Due to the highly specialized nature of the Advanced Systems equipment, certain items must be manufactured by the original equipment manufacturer, unless written approval is given by the Engineer. The Engineer may waive the requirements for shop drawings for certain original-manufactured fabricated equipment as long as original shop drawings on file remain valid for the equipment. It is the Contractor's responsibility to coordinate accordingly.

Submittals need not include all project equipment and materials in one submittal; however, the submittals for the equipment and materials for each individual pay item shall be complete in every respect. The Contractor may request, in writing, permission to make a partial submittal. The Engineer will evaluate the circumstances of the request and may agree to review such a partial submittal.

Prior to submittal, the Contractor shall review the submittal material and shall affix his stamp of approval, with comments as applicable, signed by a responsible representative, to each

appropriate submittal item. In the case of subcontractors' submittals, both the subcontractor and the general Contractor shall review and stamp approval of the submittal.

The receipt of submittal information from the Contractor will be construed as the Contractor's assurance that he has reviewed the submittal information and attests to the submittal's accuracy and conformance to the requirements of the contract documents. Unless otherwise indicated, manufacturer's guarantees shall be included with the submittal information.

4.16.3 FORMS

The Department shall furnish the multi-part IDOT submittal record and transmittal form that is required with each submittal. The Contractor and any subcontractor as applicable shall sign the submittal form. Submittal forms shall contain items for only one (1) electrical system. Forms which contain multiple systems, or submittals made without the official form, and/or incomplete forms, will be returned to the Contractor without review.

4.16.4 CERTIFICATION REQUIREMENTS

Where certifications are specified, the information submitted for approval shall incorporate certification information. When a certification is available prior to equipment manufacture, the certification shall be included with the submittal information. When a certification is available only after equipment manufacture, the submittal shall include a statement of intent to furnish the certification after equipment approval and manufacture. Certifications involving inspections and/or tests of equipment shall be complete with all test data, dates and times.

4.16.5 SAMPLES

The Engineer may request from the Contractor a sample of a specific item of a submittal for review and evaluation. The sample shall remain property of the Contractor and shall be returned after the review and evaluation with comments as applicable.

4.16.6 NEW MATERIALS INSPECTION REQUIREMENTS

The Contractor shall comply with the applicable requirements of Section 106 and 1000 of the Standard Specifications for Road and Bridge Construction. No uninspected equipment/material is to be delivered to the job site. When underground materials are furnished, the Contractor shall notify the State of Illinois, Department of Transportation, Bureau of Materials personnel to provide proper inspection for the approval of the materials, prior to delivery to the job site.

4.17 DOCUMENTATION SUBMITTALS

4.17.1 CONTRACTOR ADVISORY

The Contractor shall identify system elements which have become prone to recurring or imminent failure, and/or pose a significant liability or a safety risk, and recommend replacement or repair by submitting an advisory inspection report in the monthly routine work submittal book.

The Engineer shall review and respond to the Contractor in regards to the advisory inspection, and reserves the right to determine a course of action to rectify any identified condition. When the Engineer concurs with the Contractor's basic recommendations, a non-routine authorization will be issued for the material portion of the repair and this will reduce the Contractor's routine maintenance obligation to the labor necessary to replace the deteriorated system element. Should the Engineer determine, however, that a deteriorated condition is due to neglectful maintenance on the part of this Contractor, all remedial work shall be performed as routine maintenance.

Repair of damage from weather-related failures of electric utility systems, broken aerial electrical lines, or damage from deteriorated electric utility systems which have been observed and reported by the Contractor to the utility and the Engineer prior to the occurrence of damage, may also be eligible for payment subject to approval of the Engineer. Engineer approval of the work will be based on adequate contractor repair response, proper advisory inspection report documentation, and the substantiated link to weather-related failure or previously reported deteriorated utility systems as noted above.

In the absence of an advisory inspection report received and acknowledged by the Engineer, if system elements fail or are observed by the Engineer to be causing recurring failures or imminent safety hazards, then the Contractor is obligated for the full cost of replacement or repair under

routine maintenance. Such obligation is not limited only to individual components but may extend to the multiples of components at a location(s).

4.17.2 DAILY WORK AGENDA

The scheduling of daily work shall be a responsibility of the Contractor, but governed by established schedules and/or authorized work completion dates. The Contractor is required to email the Engineer, each IDOT System Engineer/Inspector, and the IDOT ComCenter, a daily agenda which shall account for all scheduled work to be performed on system equipment. The daily agenda shall be received by 8:30 a.m. on the specified workday or by 2:30 p.m. on Fridays when weekend work is scheduled by the Contractor.

The Department will provide the Contractor the format for the daily agenda at the Pre-Construction Meeting. The daily agenda shall list all personnel, dedicated or assigned, their name, cell phone number, description of work assignments both routine and non-routine for all systems, the location number, and ticket number or authorization number if applicable.

If the Contractor's work/testing, as specified herein, requires the presence of a IDOT Engineer/Inspector, the Contractor shall give a minimum 24 hour notice to the appropriate IDOT Engineer/Inspector when that work is to be scheduled on the daily agenda. If the Contractor proceeds with the work without this pre-notification, the Contractor shall, by the decision of the Engineer, be required to either re-perform the work/test or shall be assessed liquidated damages.

When a special project and/or system modification warrants, the Engineer may direct the Contractor to create a separate special project agenda. The same issuance requirements apply for the special project agenda as for the daily agenda.

4.17.3 DISPATCH AND CALL-OUT SCHEDULE

On Thursday of each week, the Contractor shall provide the Engineer and each IDOT System Engineer/Inspector an email or fax of the next week's EMC Dispatch Center personnel work schedule, Patrolmen night work schedule, Patrolmen weekend on-call schedule for each system, and the scheduled Emergency Response Coordinator for the week. Names, telephone numbers, call numbers, hours to be worked, or hours on-call shall be noted on this schedule.

4.17.4 EMC TICKETS

The use of Tickets for the documentation of Contractor response and work on system equipment is integral to the EMC. In the past four years, approximately 10,000 tickets per year have been created on the EMCMS by the Electrical Maintenance Contractor.

The EMCMS shall be the source and control of ticket number assignments for selected work activities of all systems. A single series of numbers will be sequentially assigned from the EMCMS database and will be used for all work activities related to the original work assignment. A separate numbering system for tickets will not be allowed.

The Contractor shall immediately create a ticket on the EMCMS when:

- Contractor personnel is dispatched to a state maintained location
- Contractor personnel finds malfunctions or damage to system equipment
- IDOT personnel or any 3rd party reports malfunctions or damage to a state maintained or non-state maintained location
- Any work in progress on equipment installation(s) is found not properly grounded and may endanger the public at large or other Department property

The Contractor shall, within 1 hour of receipt of information, record in the EMCMS ticket, the following information:

- name of informant and call-back number
- time dispatched
- time of arrival at scene
- problem found (including unit number of effected equipment)
- time incident is cleared
- description of work completed at scene

- follow-up work necessary
- clearing information as given to IDOT ComCenter
- police accident number as received from the IDOT ComCenter or other agency for Motorist Caused Damage to system equipment

Communication with the IDOT ComCenter

The EMC Dispatch personnel shall be provided with EMCMS call-out location numbers when the ComCenter workload allows, but it is the responsibility of the EMC Dispatch personnel to have a thorough knowledge of the location look-up feature of the EMCMS. The Contractor shall dispatch patrol personnel for response after being provided with a main route and a cross street by the ComCenter, Department, or other police/ municipal agency.

During certain emergency situations it may be necessary that the EMC Dispatch personnel provide periodical updates on estimated time of arrival when requested by the ComCenter. If the ComCenter provided the notification of the incident, when the ticket is cleared the Contractor is required to notify the ComCenter.

Request to ComCenter for Emergency Lane Closure

After office hours request for approval of emergency lane closures shall be made to the ComCenter, (847-705-4612) as soon as the need is determined, prior to the Contractor's arrival on the expressway.

Incidents at Non-State Maintained Locations

When a third party, Department personnel, or the Contractor's work force notify the EMC Dispatch Center of a problem with an IDOT system location which has been temporarily taken off of routine maintenance due to construction or modification, the Contractor shall create a ticket, but shall notify the proper maintainer.

When a third party, or Department personnel, notify the EMC Dispatch Center of a problem with a location which is maintained by a municipality or is owned by a private party, the Contractor shall notify the proper maintainer.

Transmitting Ticket Summary Information

The Contractor shall transmit the EMCMS ticket summary to the Bureau of Traffic Operations and Maintenance Sections and Traffic Systems Center Operations Section by 8:30 A.M., Monday through Friday workdays. This report shall account for all tickets created from 7 a.m. the prior day to 7 a.m. the current day. The Monday daily ticket summary shall account for the time period from Friday 7 a.m. through Monday at 7 a.m.

4.17.5 PLAN RECORDS MANAGEMENT

The IDOT plan records system provides for retrieval of system documentation, and provides a digitized central storage of the data records. The Engineer shall specify the pdf format to be used at the Pre-Construction meeting. When the Contractor modifies system equipment, through routine or non-routine work, the revised plans, with system location numbers and catalog cuts, shall be scanned and delivered to the Engineer monthly, in the routine maintenance work submittal book. The monthly CD submittal shall be accompanied by a cumulative yearly spreadsheet noting system location number, description of modification work, and date work was completed.

Twice per contract year, in June and December, the Contractor shall scan onto CD's, 500 plan sheets into an 11 inch by 17 inch format and an 8 ½ inch by 11 inch format. System locations and numbers shall be provided by the Engineer. The Contractor shall submit the CD's to the Engineer in the monthly routine submittal book, accompanied by a cumulative yearly spreadsheet noting system location number and name, sheet information and/or equipment catalog model item name and number, and scan date.

4.17.6 MONTHLY ROUTINE WORK BOOK SUBMITTAL

On the third business day of each month the Contractor shall submit to the Engineer a three ring binder, which contains the required documentation of the various items of work as required herein, for the prior month, grouped by System. These submittals include, but are not limited to:

Personnel Training Report – refer to Article 3.12.1

Record Drawings – refer to Article 4.9.1

3rd Party Damage Repair Invoices – refer to Article 4.9.3

MCHD Work Crew Log Summary – refer to Article 4.9.5

Patrol Schedule Change Summary Report – refer to Article 4.10.1

Night Outage Patrol Survey & Outage History Report – refer to Article 4.10.2

Red-Light Running Camera Report – refer to Article 4.10.3

Equipment Inventory Summary Report – refer to Article 4.12

Maintenance Transfer Summary Report – refer to Article 4.12

State Stock Scrap Logs – refer to Article 4.14.4

Contractor Spare Parts Inventory Report – refer to Article 4.15

Contractor Advisory – refer to Article 4.17.1

Plan Records Management – refer to Article 4.17.5

Vendor Payment Report – refer to Article 5.16

Monthly Non-Routine Work Status – refer to Article 5.18

EMCMS Time Summary Report – refer to Article 6.8.11

Grounding and Service Upgrade Progress Report – refer to System Articles herein

System Preventive Maintenance Work Documentation – refer to System Articles herein

ARTICLE 5.0 – NON-ROUTINE MAINTENANCE WORK AND PAYMENT

5.1 CONTROL OF WORK

Non-routine work under this Contract is specifically authorized work, not covered under the requirements of routine maintenance, for materials and work on the systems that tends to be irregular, event driven, or otherwise based on the selective direction of the Engineer in response to system needs. Non-routine work shall include unit-priced (PAY ITEM) work, agreed price work, force-account work, and non-routine specialty service work.

An EMCMS authorization letter shall be received by the Contractor prior to the start of all non-routine work. Any non-routine maintenance work undertaken by the Contractor prior to receiving an approved authorization is done at the Contractor's own risk. The Department is under no obligation to pay for unauthorized work or work which is not in compliance with this Contract.

The Department is under no obligation to authorize any non-routine work. The Department shall authorize unit price work wherever possible, as meets the system needs, or unit price work in addition to agreed price or force account work for the same project/location, if in the best interest of the Department.

Quote work or force account work shall be performed using first shift labor rates for straight time unless Engineer approval is given to use first shift overtime or double-time rates.

When dedicated repair crew personnel (as specified in Article 3.0 herein) are utilized for non-routine agreed-price or force account work, their labor is paid through routine maintenance, and shown on the Contractor quote and non-routine invoice as a credit to IDOT.

By January 10, 2011 and prior to the start of any non-routine agreed price or force account work, the Contractor shall provide the Engineer a list of all vehicles and construction equipment to be utilized on the Contract noting purchase year, model number, size, operating volume, etc., and the applicable matching pages from the Equipment Watch Rental Rate Blue Book. The equipment operating rates will be averaged for each equipment model/function, (backhoe, scissors-lift, etc.), to arrive at an hourly operating price which will be entered into the EMCMS for non-routine agreed price and force account work for the first half of 2011. In the last week of June the Contractor shall re-submit the applicable equipment pages from the most recent Equipment Watch Rental Rate Blue Book and the most recent labor rates and both will be updated in the EMCMS for use in the second half of 2011. A separate standby time hourly rate for equipment will not be paid.

Payment to the Contractor will be made only for actual quantities of work performed and accepted, materials furnished as specified, and new record drawings submitted as requested.

At the Engineer's request the Contractor shall inspect, investigate and provide preliminary sketch and layout with measurements, dimensions and connections of equipment, components and material for work to be performed under routine and/or non-routine maintenance. The sketch shall be provided within five days of the Engineers request.

The Department reserves the right to furnish any or all of the materials or parts for non-routine work, in which case no charge for items so furnished, shall be made by the Contractor. Materials or parts furnished by the Department may be from the state stock inventory or from other vendor sources available to the Department.

If requested by the Engineer, the Contractor may be required to perform non-routine work at a location not maintained by the Contractor and/or not listed herein.

Contract provisions or practices employed under other contracts shall have no bearing on these constraints under this contract.

5.2 UNIT PRICE AUTHORIZATIONS

Unit-priced (PAY ITEM), non-routine work shall consist of work which has been authorized based upon the unit prices (PAY ITEMS) bid on this contract for the various non-routine work items.

Non-routine unit price work as required shall be authorized by the Engineer on an EMCMS estimated authorization letter, prior to the beginning of a job, when quantities are estimated.

All pay items listed herein can be used for any electrical system and/or location specified herein.

For the Advanced Systems only the Contractor is responsible, through routine maintenance, for the equipment and labor necessary for transportation, removal, installation, or re-installation of all Non-Routine Furnish Only Pay Items.

5.3 AGREED-PRICE AUTHORIZATIONS

Agreed-price, non-routine work shall consist of work for which bid unit prices are not applicable. The Contractor shall submit an estimated quote for agreed price work with a "not to exceed price" noted in the EMCMS, prior to the beginning of a job, when quantities are estimated. If specifically requested by the Engineer, however, the Contractor shall submit a fixed, agreed price quote for the necessary work.

The Contractor shall enter all price quotes for agreed price non-routine work authorizations in the EMCMS within five (5) working days of the Engineer request. One quote shall be necessary for each non-routine authorization letter. Quotes entered into the EMCMS in January are only applicable for six (6) months and must be re-entered into the EMCMS the first week of July.

The Contractor is required to enter clearly written concise quotes in the specified format of the EMCMS, and email or fax copies to the Engineer, but is not required to mail typed (hard copy) quotes. If additional explanation is necessary the Contractor may, however, submit additional paperwork to accompany any quote that explains complete details or provides justification of the work or price. In some cases the Engineer may request three (3) price quotes from different vendors.

Once work is authorized by the Department and logged as received by the Contractor the Contractor cannot make revisions to the hourly allowable equipment operating rates or hourly labor rate. The quote submitted to the Department should take into account the expected completion date of the work.

Agreed-Price Work

When non-routine agreed price work (not pay items) requires materials to be furnished and installed, the Contractor shall furnish the invoice for materials and the quote may include a fifteen percent mark-up per Article 109.04(b)(3) of the Standard Specifications.

Agreed-Price Work by a Sub-Contractor

For non-routine agreed price work (not pay items) performed by an approved subcontractor as named on the authorization for work and on the contractor invoice, in accordance with Article 109.04 (b)(7) of the Standard Specifications for Road and Bridge Construction, when work is performed by an approved subcontractor, the Contractor shall be allowed administrative costs of an amount equal to five (5) percent of the total approved costs on a individual work authorization, with the minimum being \$100. An additional material mark-up of fifteen percent per Article 109.04(b)(3) of the Standard Specifications is not allowed.

Agreed-Price Work by a Specialty Vendor or requested by the Department

When specialty service work (work by vendors not approved as subcontractors) is approved and authorized by the Department through agreed price work the Contractor shall be paid administrative costs of an amount equal to five (5) percent of the first \$10,000, with a minimum of \$ 100.00, and the Department shall allow an additional one (1) percent of any amount over

\$10,000 of the total approved costs, for an individual work authorization. This work includes Department furnishing materials for State Stock.

If the Contractor is furnishing an invoice for materials not supplied by the vendor for specialty service work, the quote may include an appropriate mark-up per Article 109.04(b)(3) of the Standard Specifications. In no case shall specialty service work, in its entirety be considered "materials" when a quote for specialty service work is submitted to the Department, or shall Article 109.05 of the Standard Specifications be applicable.

5.4 FORCE ACCOUNT AUTHORIZATIONS

Force Account Work shall consist of work for which an agreed price cannot be established between the Engineer and the Contractor. The Engineer may direct the Contractor to perform any non-routine work as force account work which shall be measured and paid as described in Article 109.04(b) of the Standard Specifications.

A daily time/work accounting, with the name of each individual, shall be kept on the daily general billing log, which shall be signed by the Contractor's field supervisor and submitted to the Engineer at the completion of each work day for the authorized work. A summary of all daily general billing logs, as well as proper documentation of materials used, shall be submitted to the Engineer within seven (7) working days following the completion of work.

A general foreman's time will not be billable on force account work unless there are more than five (5) additional crew workers employed at any one time, place and job and then only with the prior approval of the Engineer. A mark-up of fifteen (15) percent is allowed for material costs, which shall include any shipping and handling fees. The Contractor shall not be allowed overtime and/or prime time billing unless prior approval is received from the Engineer.

The Contractor shall submit an estimated quote for the force account work with a "not to exceed price" noted in the EMCMS, prior to the beginning of a job, when quantities are estimated. Force account work as required herein shall be authorized by the Engineer on an EMCMS estimated authorization letter.

5.5 EXPENSES INCURRED BY THE DEPARTMENT

In accordance with Article 109.05 of the Standard Specifications for Road and Bridge construction, as hereby modified, upon written request of the Engineer, the Contractor shall pay the bills for specialty service work and/or expenses incurred by the Department. The Contractor shall be paid administrative costs of an amount equal to five (5) percent of the first \$10,000, with a minimum of \$ 100.00, and the Department shall allow an additional one (1) percent of any amount over \$10,000 of the total approved costs, for an individual work authorization. This work shall be authorized on an EMCMS estimated authorization letter.

5.6 ACCEPTANCE OF NON-ROUTINE WORK ASSIGNMENTS

It is the Contractor's responsibility to review daily, on the EMCMS, the list of authorizations which have been transmitted to the Contractor, and subsequently view and print the non-routine work authorization letters. The Contractor shall communicate with the Engineer regarding any questions about the work assignment and the due date of the work completion.

Unless an email from the Contractor Project Manager is received by the Engineer within five (5) working days from the authorization transmittal date, which states the points of disagreement to the transmitted work assignment or due date, the authorization shall be accepted by the Contractor and logged as received. Any non-routine authorization letters which have been transmitted, but not entered as received by the Contractor in the EMCMS within five (5) working days shall be subject to the assessment of liquidated damages.

5.7 NON-ROUTINE WORK COMPLETION TIME

The normal completion time for non-routine work shall be 90 calendar days from the IDOT transmittal date of the authorization letter, or as specified by the Engineer. The Contractor may contact the Engineer to request a later date, or the Engineer may request an earlier date from the Contractor. If the Contractor fails to seek a change in completion date, the work completion time will remain as initiated by the Engineer. The Contractor is urged to check the EMCMS to review all authorizations which have been transmitted.

5.8 NON-ROUTINE WORK COMPLETION NOTIFICATION

Unless prior approval is given by the Engineer, the Contractor shall notify the Engineer one day, (24 hours), prior to the Contractor's completion of the authorized work project in order that a joint EMC/IDOT inspection of the work may be held. In addition, the Contractor shall submit record drawings of any changes to the system(s) prior to the completion of the work.

5.9 NON-ROUTINE EMCMS WORK COMPLETION REQUIREMENTS

When the work is complete the Contractor shall enter the work completion date in the EMCMS authorization letter, print an EMCMS copy of the authorization letter, note any pay item quantity changes, enter EMCMS quote final quantities if required, stamp "COMPLETED WORK" on the letter, scan and email to the Engineer.

5.10 EMCMS WORK INSPECTION APPROVAL

Following a field inspection, if all required documentation of work has been received, and record drawings submitted if requested, the Engineer shall enter the final pay item quantities, work inspection approval date, and EMCMS Engineer approval in the EMCMS final authorization letter. This final non-routine work authorization is transmitted to the Contractor.

The Engineer may waive the physical field inspection of any work if he believes the completion to be reasonably demonstrated by performance of the system, electronic monitoring, or other means. In such cases, the Engineer reserves the right to follow-up and/or selective spot inspections, and if evidence of prior incomplete or incorrect work is found, the Contractor shall remain responsible for corrective action and open to liquidated damages and/or payment withholding as provided elsewhere herein.

5.11 EMCMS CORRECTIVE WORK LIST

In cases where deficiencies are found at the IDOT inspection of the Contractor's work, the Engineer shall issue a corrective work list (CWL) on the EMCMS. The Contractor should view the EMCMS corrective work list summary report on a regular basis in order to promptly address any work deficiencies. When the Contractor has completed the work deficiencies the Contractor shall notify the Engineer that the work is ready to re-inspect.

5.12 EMCMS NON-ROUTINE WORK INVOICING PROCEDURES

The Contractor shall review daily, on the EMCMS, the list of authorizations which have been transmitted to the Contractor, and subsequently view and print the final non-routine work authorization letters. After these procedures are completed the Contractor may create an EMCMS invoice for payment of the work.

The Contractor shall prepare an EMCMS invoice for each Final Authorization letter. Each EMCMS invoice shall carry the same number as the authorization letter and shall be signed by a Principal of the Company, attesting that the work, as invoiced, has been completed and inspected in accordance with the provisions of the Contract and all applicable specifications. The invoice shall also show a notarized certification by an officer of the Company. The Contractor's invoice shall conform to the EMCMS form requirements. The Engineer, prior to the start of the contract, shall review and approve the style and format of the Contractor's invoice.

All work billed for payment shall be complete, no billing for partially-completed work will be allowed. All invoices shall be submitted to the Department no later than 30 days following work completion approval by the Engineer.

To receive payment for completed work, the Contractor shall submit to the Engineer an original signed invoice with two copies, and an original signed final authorization letter with two copies. (An estimated authorization letter will not be acceptable.) The Engineer will sign the original invoice and final authorization and will forward to the District's Financial Services office personnel for scheduling of payment. An EMCMS entry is made for all invoices, noting the date it was scheduled for payment. Normal processing time for non-routine work payment to the Contractor is 6 to 8 weeks.

5.13 PAYMENT TO SPECIALTY VENDORS

Refer to Article 5.8 for a definition of non-routine work authorization for Expenses Incurred by the Department. Within seven (7) days following the EMCMS entry of the date the work was scheduled for payment, the Contractor shall pay the specialty vendor invoice, and fax or e-mail a confirmation of the payment with check number to the Engineer.

5.14 MONTHLY NON-ROUTINE WORK STATUS

The Contractor shall submit a schedule/chart in the monthly routine work submittal book which includes the status of all open tickets and open non-routine work authorizations. For all outstanding work and authorizations which have materials on order the Contractor shall submit the Vendor name, purchase order, date it was issued and expected delivery date(s).

ARTICLE 6.0 – ADVANCED SYSTEMS

6.1 DESCRIPTION OF WORK

Advanced Systems are technology dependent items of equipment and their controls and communications. The Contractor shall provide labor, equipment and materials as specified herein to maintain the operation and performance of all equipment and its interconnecting cables specified in this article with all associated devices, hardware and software.

- A-1a: Kennedy Expressway Reversible Lane Access Control (REVLAC)
- A-1b: Roosevelt Ramp Access Control System (RACS)
- A-1c: Homeland Security Expressway Ramp Gates
- A-2: Traffic Monitoring Cameras
- A-3a & A3b: Building, Hut, Base Station, and Tower Equipment

Work on the Advanced Systems herein shall be coordinated as necessary with on-going work under the Advanced Systems Maintenance Contract 60I28 (routine work ending March 31, 2011 and finish up of non-routine work by December 31, 2011), and the Statewide Radio Maintenance Contract.

All locations under Routine Maintenance Pay Item A-1 and A-2 and various locations under Pay Item A-3a will be maintained by another contractor from January 1, 2011 to end of March 31, 2011. The Engineer will conduct with the Contractor preliminary maintenance transfer meetings in February and March, 2011. An official Maintenance Transfer Meeting will be held on April 1, 2011, at which time the Contractor shall furnish and install new locks, (approximately 300) as approved by the Engineer, on system equipment, as requested by the Engineer. Refer also to Article 3.3.5, Locks and Keys.

The Contractor will be provided access to all locations coming onto maintenance. It is the Contractor's responsibility to inspect all locations prior to transfer of maintenance. A list of all corrective work shall be submitted to IDOT Engineer at the time of transfer.

The list of locations and description of items provided herein is for bidding purposes only, actual quantities and material to be maintained is the responsibility of the Contractor. The Contractor shall inspect all locations to assure continued maintenance and operation of all systems specified in this contract.

6.2 ROUTINE MAINTENANCE ITEM DESCRIPTIONS

Unless noted herein, all requirements as listed herein Article 6.0 shall be paid through, are part of, and incidental to routine maintenance.

The Contractor is paid monthly at the contract unit bid price per location, to maintain equipment as listed in Pay Items A-1, A-2, A-3a and A-3b, or maintain equipment which may be added for the duration of the Contract. The bid price shall be payment in full for the work as specified herein the Contract and as directed by the Engineer.

A list of locations is found in Section 3 and general contract requirements are discussed in other articles herein.

New locations will be added to the Advanced Systems through the duration of the Contract including a CCTV distribution system with Kingry, Dan Ryan, and Bishop Ford cameras, nodal buildings and associated equipment, IP multicast CCTV and network expansion, and associated equipment that is part of the Dan Ryan/Bishop Ford construction. After transfer of maintenance and acceptance by the Department there is a minimum of six (6) months of warranty coverage from the construction contractor for defects in materials or workmanship.

**6.3 A-1a: REVLAC - Reversible Lane Access Control System
(Locations off-maintenance until April 1, 2011)**

The REVLAC System operates to control access at the six entry ramps to the Kennedy Expressway Reversible Lanes and extends from approximately the Ohio Street interchange on the south to the Edens/Kennedy junction on the north, (a distance of approximately 7.5 miles). The REVLAC System includes, but is not limited to; swing gates and their transmissions, barriers and barriers signs, changeable message signs, chevron signs, gore signs, auxiliary signs, roadside control panels, weather station warning signals, cattrons, supervisory controls, operations cameras, and all interconnecting cable, Ethernet, telephone data, and fiber and microwave radio systems for communications.

Swing Gates

The REVLAC system incorporates one hundred seventeen (117) swing gates manufactured by B & B Electromatic of Norwood, Louisiana. These swing gates direct the traffic away from closed ramps. Swing gates can be operated remotely with cattron units, locally, and with a manual hand crank.

Restraining Barriers

The system incorporates six (6) restraining barriers manufactured by the Entwistle Company of Hudson, Massachusetts. Each reversible entrance ramp has a barrier to prevent the entrance of vehicles when in the lowered (closed) position. Each barrier can be operated remotely, locally or by means of a built-in 12V DC motor which can be powered from a 12V DC truck battery.

Signs and Chevrons

There are a combination of forty-seven (47) auxiliary fiber optic and LED signs manufactured by the National Sign and Signal Co. of Battle Creek Michigan throughout the REVLAC System. They are operated remotely.

Roadside Panels

The sixteen (16) roadside panels are the local operation control devices which take control away from the PLC and transfer to local manual switches.

Changeable Message Signs (Drum Signs)

There are fifteen (15) changeable message (drum signs) as manufactured by Lake Technologies. Each changeable message sign can be operated remotely, locally, and with a manual hand crank.

Operations Cameras

There are forty-one (41) operations cameras which provide an overview of the REVLAC operations to the dispatch operators at the IDOT Headquarters.

**6.4 A-1b: RACS - ROOSEVELT RAMP ACCESS CONTROL SYSTEM
(Locations off-maintenance until April 1, 2011)**

The RACS System operates to control access at the single entry ramp from eastbound Roosevelt Road to eastbound I-290, with the ramp entry just east of York Road. The RACS System includes, but is not limited to swing gates and their transmissions, dynamic message signs, chevron signs, auxiliary signs, a traffic detector on the IL 38 ramp, roadside control panels, supervisory controls, alarm system, operations cameras, and all interconnecting cable, Ethernet, fiber and microwave radio systems for communications. Refer to pay item A-3a for RACS building maintenance.

Swing Gates

The RACS System incorporates ten (10) swing gates manufactured by B & B Electromatic of Norwood, Louisiana. These swing gates direct the traffic away from closed ramps. Each swing gate can be operated remotely, locally, and with a manual hand crank.

Dynamic Message Signs (LED)

There are three (3) dynamic message signs, as manufactured by Voltron. Each sign can be operated remotely, or locally.

Signs and Chevrons

There are a combination of eight (8) LED signs manufactured by the National Sign and Signal Co. of Battle Creek Michigan throughout the RACS System. They are operated remotely.

Roadside Panels

There is one (1) roadside panel mounted to the Hillside Ramp Bldg/Hut, a local operation control device which takes control away from the PLC and transfers to local manual switches.

Operations Cameras

There are seven (7) operations cameras which provide an overview of the RACS operations to the dispatch operators at the IDOT Headquarters.

**6.5 A-1c: EXPRESSWAY RAMP GATE SYSTEM
(Locations off-maintenance until April 1, 2011)**

Forty-one (41) ramp gates units have been installed for access control to the area expressways. The ramp gates, the gate arm assembly, the actuator operating mechanism, and bollards are structured so as to stop vehicles from entering expressways through entrance ramps, in case the current inbound expressway traffic would need to be changed to outbound.

**6.6 A-2: TRAFFIC MONITORING CAMERAS
(Locations off-maintenance until April 1, 2011)**

The CCTV System consists of one hundred forty-eight (148) cameras with pan-tilt-zoom, (PTZ) on expressways, at construction areas, at State Police Accident Investigation Sites, and at various areas for general surveillance, as located throughout District 1. Also included under this pay item is the maintenance of the camera brackets, specifically designated camera poles, camera fiber optic transceivers, or other mounting devices, electrical equipment and appurtenances at the camera locations.

**6.7 A-3a and A-3b: BUILDINGS, HUTS, BASE STATIONS, AND TOWER EQUIPMENT
(Various locations off-maintenance until April 1, 2011)**

There are twenty-two (22) locations where the Contractor shall maintain equipment, within buildings, huts, and at base stations, monopoles, and towers, all of which contain various types of electrical power apparatus, control systems, alarm systems, fiber panels, fiber connections, networks, radio systems, including microwave radio cables and microwave radio towers/monopoles, transformers, lighting systems, power wiring, HVAC systems, generators, transfer switches, electrical service feeder cable, distribution panels, smoke detectors, doors, locks, and all associated equipment and appurtenances owned by the State of Illinois and under the jurisdiction of the Department. The equipment specified in the locations listed below gives a good overview of the items to be maintained, however, there may be other electrical items which require maintenance. The Contractor is urged to visit the sites to view all the electrical equipment to be maintained.

6.7.1 REVLAC BUILDINGS A, C, D, and E

Electrical Maintenance

Buildings A, D and E have dual electrical services. Building C is fed from building D. Each of these three buildings route power through a UPS and have battery backup with associated chargers and inverters for critical controls and monitoring.

Operational Control Panel

Each of the buildings has an Operational Control Panel (OCP). The OCP's house the PLCs Allen Bradley servers 5/60 and manual controls for the swing gates, signs and barriers. These OPC's in the control buildings differ from the IDOT ComCenter Supervisory Control Panels (SCP) only in that the individual gate, sign, and barrier status indication is not available. Instead, a device group indication is provided. The control functionality is otherwise identical, as each of the control buildings can operate the entire system through the normal or abnormal events panels of its OPC. Remote panels may be used for system testing or may be used in the event of a power outage or disruption at the IDOT ComCenter in order that the reversible lane control is not affected.

Other items to be maintained:

- Shelter/Hut Equipment & connections
- Communication equipment
- Hirschmann Fiber Optic Transceivers
- Physical Building
- Outdoor/Indoor and Service Entrance Equipment
- Various types of electrical power apparatus, control systems, alarm systems, radio systems, including microwave radio cables and microwave radio towers/poles, transformers, lighting systems, power wiring, circuit breakers/power supply systems, heating and ventilation systems, doors, locks, and all associated equipment and appurtenances
- CCTV Monitoring and Equipment (refer to IDOT Headquarters, Article 6.7.11)
- SONET System (refer to IDOT Headquarters, Article 6.7.11)
- All interconnecting cable, Ethernet, and fiber and microwave radio systems and communications

6.7.2 REVLAC BUILDING B

Building B is an interconnect building which houses equipment for REVLAC data lines.

6.7.3 ELECTRICAL MAINTENANCE FIELD OFFICE/MAT LAB

101 W. Center Ct., Schaumburg

Items to be maintained include:

- Outdoor Lighting and its control equipment
- Underground Cable (outside and inside)
- Conduits, GFIC outlets, and switches (outside and inside)
- Fiber Panels

Lighting SCADA Equipment

- Windows NT client computer
- Monitor
- Multi Tech DED line modem
- Portable UPS
- GUI Software
- Engineering Processors
- Software as applicable
- UPS and all other appurtenances

Cable Management System

A cable management system is used to document and manage horizontal and backbone cables, hardware, assets, pathways, locations, contacts, and detail equipment connections. It facilitates the importation of test results, attaches drawings, photos and documents, creates a contact directory, and cable label.

- Hardware and Software:
Server: Dell Power Edge 2900
Brady: Network Documentation and Cable Management Software
Microsoft SQL Server 2000

EMCMS System Equipment

- 1 Compaq Development Work Station with Windows 2000 Professional OS
With Oracle Application Server, Oracle Development Suite, and Microsoft Office
- 8 Compaq Desk Pro or equivalent work station
- HP Jet Direct 500x Print Server
- EPSON LQ-2090 or equivalent Dot Matrix printers
- Cisco 1700 or equivalent Router
- Cisco 1548 or equivalent Switch
- 56 K Modem
- 24 port interface patch panel
- 8 KVM Switches

Pump Station SCADA Equipment

- Dell 2000 client computer
- Monitor
- 4 Engineering processors
- Windows Operating systems
- Software as applicable
- UPS all other equipment and appurtenances
- AEGIS
 - 1 Silent Knight Digital alarm receiver Model 9000
 - 1 Printer

6.7.4 EMC DISPATCH CENTER - (IDOT Equipment to be Maintained)

Items to be maintained include:

- Traffic System Conflict Monitor Alarm System
- AEGIS Alarm Equipment, IDOT or EMC owned
- EMCMS equipment required for communications between Contractor's facilities and central computer at IDOT District 1 Headquarters

Lighting SCADA System

One (1) server and monitor, all software including OS, GUI software, FIU cabinet, SCADA CPU's dedicated line and dial-up modems, radio power supplies and back-up batteries, rocket port, printers, radio concentrators, four VHF/UHF radio, portable UPS, batteries, and all other equipment and appurtenances.

PS SCADA System

AB RSview server computer (hardware & software) dedicated lines and dial-up modems, computer monitor, printer, radio base station equipment, rockport multi-serial board and cables, batteries and all other equipment and appurtenances.

6.7.5 EMERGENCY TRAFFIC PATROL OFFICE (ETP) - 3501 Harrison St., Chicago

Items to be maintained:

- Cattron units (for the remote control of the swing gates)
- AVL (Automatic Vehicle Locator) Units (62)

- Video Work Station (future install)
- Outdoor/Indoor Lighting system and service entrance equipment (refer to Article 7.0 Lighting for maintenance requirements)

6.7.6 I 290 HUT – OB I 290 @ West of I 90 94

Items to be maintained:

- Shelter/hut, equipment and connections

6.7.7 I 55 HUT A – I 55 @ 26th St & Wallace

Items to be maintained:

- Shelter/hut, equipment and connections
- CCTV and Associated Equipment
Refer to IDOT Headquarters, Article 6.7.11

6.7.8 I 57 HUT A – I 57 @ Parnell Ave

Items to be maintained:

- Shelter/hut, equipment and connections
- CCTV and Associated Equipment
Refer to IDOT Headquarters, Article 6.7.11

Proposed Equipment

- 16 iMPath VSG Encoder cards
- 2 iMPath Chassis and Fan Trays
- 16 Leitch VDAs
- 1 Leitch VDA Chassis
- 4 ToteVision 4-LCD Monitor Racks
- 1 Middle Atlantic Power Strips
- 1 24 Port Video Patch Panels
- 4 Axis 241Q Video Servers
- 1 Axis Chassis
- 2 Cisco 4506 GigE Switches
- 9 IFS VR1930 Fiber Receivers
- 1 IFS Chassis
- 1 RuggedComm Fiber/Copper Switches
- 1 Zenith ATS
- 1 UPS
- 1 Generator
- Fiber Panels

6.7.9 I 57 HUT B – I 57 @ I 80

Items to be maintained:

- Shelter/hut, equipment and connections
- Generator, its transfer switch, alarm panel and appurtenances
Refer to Article 8.0 to review scheduled maintenance
- CCTV and Associated Equipment
Refer to IDOT Headquarters, Article 6.7.11

Proposed Equipment

- 40 iMPath VSG Encoder cards
- 4 iMPath Chassis and Fan Trays
- 2 24 Port Video Patch Panels
- 10 Axis 241Q Video Servers
- 1 Axis Chassis
- 1 Eltek Flatpak 1500 Rectifier System

- 1 Eltek Battery String
- 2 Cisco 4506 GigE Switches
- 1 Cisco 15454 ONS
- Fiber Panels

6.7.10 RACS ROOSEVELT RAMP BUILDING - 12100 W Roosevelt Rd

Items to be maintained include:

- Shelter/hut, equipment and connections
- 1 PLC Workstation
- 1 NetCams Workstation
- Equipment connections
- Operations cameras
- Communication equipment
- Various types of electrical power apparatus, control systems, alarm systems, radio systems, including microwave radio cables and microwave radio towers/poles, transformers, lighting systems, power wiring, circuit breakers/power supply systems, heating and ventilation systems, doors, locks, and all associated equipment and appurtenances
- Physical Building
- Radar traffic detection equipment, Traffic Detector on IL 38 ramp
- Generator, its transfer switch, alarm panel and appurtenances
Refer to Article 8.0 to review scheduled maintenance
- CCTV and associated equipment, CCTV Monitoring
Refer to IDOT Headquarters, Article 6.7.11
- All interconnecting cable, Ethernet, and fiber and microwave radio systems and communications

6.7.11 IDOT DISTRICT 1 HEADQUARTERS - 201 W. Center Ct. –Schaumburg

Items to be maintained include:

- Monopole, equipment and connections
- 3 cameras
- Hirschmann Fiber Repeaters
- 2 RACS Workstations
- RACS Event Logger
- RACS Datalogger computer system
- SONET Maintenance Workstation
- NetCams Workstation
- NetCams Server
- REVLAC Event Logger
- REVLAC Alarm Monitor
- Rack Unit TLC Video Server
- Sensoray Video Capture Server
- SWARMS Workstation
- CISCO Maintenance Computer Equipment
- iMPATH Video Equipment
- 1 AVL Server
- 2 AVL Workstations
- 1 Multi-site base station controller of AVL System
- 2 Dell Laptops for PLC Programming
- 1 HP Laptop for PLC Programming
- 1 HP or Compac CPU and Monitor for MCHD Claims
- 6 Dispatch Consoles with auto-rise function
- 2 Dispatch Supervisory Consoles with auto-rise function
- 3 Supervisory Control Panels (for REVLAC)
- Overhead Lighting for Dispatch and Supervisory Consoles

- 13 LCD Monitors and appurtenances
- 1 Mounted 32" TV
- 9X Media Video Wall Controller and Displays
- Generator and its transfer switches, alarm panels and appurtenances
- UPS, its Transfer Switch, and Station Battery
- 12 VDC Station Battery and charger, RF Transmitter
- Outdoor Lighting and its control equipment
- Underground Cable, Conduits and GFIC outlets for EMC maintained equipment

HVAC for ComCenter, Equipment Room, and one Emergency Elevator

Trane Air Conditioning model SWUA-2006-MAV, Type 671-0530-40A, and Serial no. L85B26255, compressor motor, fan motor and wall thermostat.

Lighting SCADA Central System

One server and one client computers, monitors, OS, GUI software, SCADA Application tool box (software), FIU cabinet, SCADA CPU's, lighting monitor (night-lite), dedicated lines and dial-up modems, Comtegras, radio power supplies and back-up batteries, rocket port, printers, radio concentrators, photo-cell, night light, portable UPS and all other equipment and appurtenances

Pump Station SCADA Central System

AB RSview (Development) server computer (hardware & software), dedicated lines and dial-up modems, computer monitor, printer, radio base station equipment, rocketport, multi-serial digi-8 board and cables, 3Com 16 port switch, Windows Operating systems, Hirschmann fiber repeaters, and all other equipment and appurtenances.

Dynamic Message Remote System

(refer to Surveillance System for Maintenance Requirements)

One (1) remote status terminal, monitor, video controller including firmware (software), one (1) remote terminal with 486 CPU, modems, utilities services (including all taps, terminations, conduits, and cabling interconnect), and all other equipment and appurtenances

SONET System

The SONET system network is the video and data communication links between the IDOT District 1 Headquarters ComCenter, Traffic Systems Center and other facilities and RACS and REVLAC equipment. The SONET system network is comprised of the digital microwave radio system 6 GHz between Schaumburg Headquarters and the Nordic tower, 11 GHz between the Nordic repeater tower and the Hillside tower, and 6 GHz between the Schaumburg tower, ISP Des Plaines repeater tower and REVLAC Building E at 4755 Wilson Avenue in Chicago.

ATMS Workstations (refer to Surveillance System for Maintenance Requirements)

- 3 360 Cameleon Workstations
- 3 18" LCD Monitors and Ethernet cabling

EMCMS (Electrical Maintenance Contract Management System)

- 1 Database server with Sun Solaris OS
- 1 Application server with Windows 2000 OS
- 1 Infrastructure server with Windows 2000 OS
- 1 Veritas 4.5 Net backup drive unit
- 1 Cisco Router
- 4 Cisco Switch
- 1 56 K Modem
- 30 Compaq Desk Pro work stations
- 3 HP JetDirect 500x print server
- 2 HP Laser Jet Printer
- 2 Epson LQ-2090 Dot Matrix Printer
- 16 KVM Switches

GCM Gateway Network

The GCM Gateway Network is the equipment/server which posts a website with travel information for the Gary, Indiana; Chicago, Illinois; and Milwaukee, Wisconsin corridor area. Many travel screens are available including real-time maps of congestion and construction data. Equipment to maintain for the Cisco gigabit network includes a D1 switch model WS-C3750G-24TS-E, CAT1032ZJ19, and D1 router model CISCO3825, FCZ121174A4.

CCTV and Associated Equipment

The Contractor shall maintain the CCTV and associated equipment including cameras, interconnecting fiber and cable, control and switching equipment, monitors, interfaces to communications network equipment including; video transceivers, codecs, video transmission and distribution equipment, switching equipment, video servers, video work stations, wireless links, fiber optic patch panels, fiber jumpers, connections, etc.

Gig-E Network

The Gig-E network is an Ethernet path which runs on the SONET system.

ComCenter REVLAC Control System

The REVLAC Control System is a network of five sets of Allen Bradley PLC-5/60 and PLC-5/80 Programmable Logic Controllers (PLC). Each Remote Control Building and the ComCenter utilizes a redundant processor in their PLC system. Each system coordinates the communications and control of that specific location. Normally all five units work as an interconnected system (network) through the communications links; however, each system may operate as a stand-alone unit for its ramp or operate the entire system in the event of a loss of communication to/from Schaumburg.

Proposed Equipment from Dan Ryan Construction Project

- 16 iMPath VSG Decoder cards
- 2 iMPath Chassis and Fan Trays
- 32 Leitch VDAs
- 2 Leitch VDA Chassis
- 8 ToteVision 4-LCD Monitor Racks
- 2 Middle Atlantic Power Strip
- 2 Cisco 4506 GigE Switches
- 2 360 Workstation
- 2 360 Servers
- 1 KVM
- Rack Mount 15" Monitor
- Cisco Works Server

6.7.12 FOSTER TOWER/BASE STATION - I-94 @ Foster Ave

Items to be maintained include:

- Tower, shelter/hut, equipment and connections
- Indoor/Outdoor Lighting and Control Equipment
- REVLAC communications equipment
- Generator, its transfer switches, alarm panels and appurtenances
Refer to Article 8.0, to review scheduled maintenance
- Transfer switch
- Electrical service feeder cable
- Distribution panels
- Emergency Lighting Fixtures with battery back-up
- HVAC units
- Smoke Detector systems
- Doors, roofs
- Fencing

- Gates
- Locks
- Flashing beacons
- PS SCADA system repeater radio
- AEGIS alarm System
- Antenna and Antenna line
- Back-up battery
- Diagnostic board
- All other equipment and appurtenances

6.7.13 HILLSIDE TOWER/HUTS – (Radio and Media Huts) I 294 @ I 88 (5250 W Harrison)

Items to be maintained include:

- Tower, shelter/hut, equipment and connections
- Indoor/Outdoor Lighting and Control Equipment
- SONET System (refer to IDOT Headquarters, Article 6.7.11)
- CCTV and associated equipment (refer to IDOT Headquarters, Article 6.7.11)
- Hirschman Fiber Repeaters
- 3 cameras mounted on the tower for picture transmission to a central control and switching system at the IDOT Headquarters ComCenter
- 1 Cisco Gigabit network switch for GCM Network
Model number WS-C3750G-12S-E, CAT0936Z321
- HVAC units
- UPS and Station Batteries
- Generator, its transfer switches, alarm panels and appurtenances
Refer to Article 8.0 to review scheduled maintenance

Proposed Equipment

- 2 iMPath VSG Decoder cards
- 1 iMPath Chassis and Fan Trays
- 1 ToteVision 4-LCD Monitor Racks
- 1 Middle Atlantic Power Strips
- 1 Eltek Flatpak 1500 Rectifier System
- 1 Eltek Battery String
- 2 Cisco 4506 GigE Switches
- 1 Cisco 15454 ONS

6.7.14 NORDIC TOWER/HUT – I-355 @ Nordic Rd

Items to be maintained include:

- Tower, shelter/hut, all equipment and connections
- SONET System (refer to IDOT Headquarters, Article 6.7.11)
- CCTV and Associated Equipment (refer to IDOT Headquarters, Article 6.7.11)
- REVLAC communications equipment
- Indoor/Outdoor lighting and Control Equipment
- HVAC units
- UPS and Station Battery
- Generator, its transfer switch, alarm panel and appurtenances
Refer to Article 8.0 to review scheduled maintenance

6.7.15 PLATO TOWER/BASE STATION – IL 47 @ McDonald Rd

Items to be maintained include:

- Tower, shelter/hut, all equipment and connections
 - Transfer switch
 - Electrical service feeder cable
 - Distribution panels
 - Doors, roofs
 - Fencing
 - Gates
 - Locks
 - Flashing beacons
 - PS SCADA system repeater radio
 - AEGIS alarm System
 - Antenna and Antenna line
 - Back-up battery
 - Diagnostic board
 - Indoor/Outdoor Lighting, GFIC Outlets and Control Equipment
 - All other equipment and appurtenances
 - Generator, its transfer switch, alarm panel and appurtenances
- Refer to Article 8.0 to review scheduled maintenance

6.7.16 SCHAUMBURG TOWER/HUT – I 90 @ Roselle Rd

Items to be maintained include:

- Tower, shelter/hut, equipment and connections
- SONET System (refer to IDOT Headquarters, Article 6.7.11)
- CCTV and Associated Equipment (refer to IDOT Headquarters, Article 6.7.11)
- Hirschman Fiber Repeaters
- REVLAC communications equipment
- Indoor/Outdoor lighting and Control Equipment
- HVAC units

6.7.17 TRAFFIC SYSTEMS CENTER - Oak Park – 445 Harrison St.

Items to be maintained include:

- UPS, its Transfer Switch, and Station Battery
 - SmartNet
 - Equipment and connections
 - Gig-E Equipment
 - Outdoor Lighting and its control equipment
 - Underground Cable, Conduits and GFIC outlets for EMC maintained equipment
 - Generator and its transfer switches, alarm panels and appurtenances
- Refer to Article 8.0 to review scheduled maintenance

CCTV and Associated Equipment

Refer to IDOT Headquarters, Article 6.7.11

EMCMS System Equipment

- 2 Compaq Desktop or equivalent Work Stations
- 1 Cisco Switch
- 1 HP Jet Direct Print Server
- 1 Epson LQ-2090 Printer

GCM Gateway Network/SmartNet

Equipment to maintain for the Cisco gigabit network includes a TSC switch model WS-C3750G-24TS-E, #CAT1032ZJ4S, D1 router model CISCO3825, #FCZ122670VP, Cisco Paetec router

model 7204VXR, #74229976, one switch at TSC Cisco 3550, WS-C3550-48-SMI, SN:CAT0833Y2VC and one switch at Bld "E" Cisco 3560, WS-C3560-24TS-S, SN:FDO1241Z3GE.

Proposed Equipment from Dan Ryan Construction Project

- 12 iMPath VSG Decoder cards
- 1 iMPath Chassis and Fan Trays
- 24 Leitch VDAs
- 2 Leitch VDA Chassis
- 6 ToteVision 4-LCD Monitor Racks
- 1 Middle Atlantic Power Strip
- 24 Port Video Patch Panels
- 1 Eltek Flatpak 1500 Rectifier System
- 1 Eltek Battery String
- 2 Cisco 4506 GigE Switches
- 1 Cisco 15454 ONS
- 1 360 Workstation

6.7.18 LOCATIONS UNDER CONSTRUCTION – Equipment Proposed for Advanced Systems

I 55 Hut B – I 55 @ 26th St & Normal Ave

- 32 iMPath VSG Encoder cards
- 3 iMPath Chassis and Fan Trays
- 32 Leitch VDAs
- 3 Leitch VDA Chassis
- 8 ToteVision 4-LCD Monitor Racks
- 2 Middle Atlantic Power Strips
- 2 24 Port Video Patch Panels
- 8 Axis 241Q Video Servers
- 2 Axis Chassis
- 1 Eltek Flatpak 1500 Rectifier System
- 1 Eltek Battery String
- 2 Cisco 4506 GigE Switches
- 1 Cisco 15454 ONS
- 8 IFS VR1930 Fiber Receivers
- 1 IFS Chassis
- 2 RuggedComm Fiber/Copper Switches
- 1 SCADA Cabinet
- 1 Allen Bradley Control Logix Processor
- 1 AB 10 Slot Chassis
- 1 AB Ethernet Card
- 1 Prosoft Modbus Card
- 4 AB Digital Input Cards
- 2 AB Digital Output Cards
- 1 US Robotics Modem
- 1 Entry Key Switch
- 1 Zenith ATS
- 1 UPS
- 1 Generator
- Shelter/Hut equipment and connections

I 90 94 @ State St./66th St

- 1 SCADA Cabinet

- 1 Allen Bradley Control Logix Processor
- 1 AB 10 Slot Chassis
- 1 AB Ethernet Card
- 1 Prosoft Modbus Card
- 4 AB Digital Input Cards
- 2 AB Digital Output Cards
- 1 US Robotics Modem
- 1 Entry Key Switch
- Shelter/Hut equipment and connections

I 80 94 @ Indiana State Line/Lansing

- 16 iMPath VSG Encoder cards
- 2 iMPath Chassis and Fan Trays
- 1 24 Port Video Patch Panels
- 4 Axis 241Q Video Servers
- 1 Axis Chassis
- 1 Eltek Flatpak 1500 Rectifier System
- 1 Eltek Battery String
- 2 Cisco 4506 GigE Switches
- 1 Cisco 15454 ONS
- Shelter/Hut/Tower equipment and connections

SONET Nodes with Cisco 4506's:

- Traffic Systems Center
- I 57- I 80 new hut

Cisco 4506's:

- I 57 – Ryan
- D1 Schaumburg HQ
- Hillside Hut

Various Areas for Cameras

- 34 CCTV cameras on I 55
- 17 Treehaven CCTV Modules
- 16 Bosch G4 Dome Cameras
- 1 Bosch G3 Envirodome
- 17 IFS VT 1930 Fiber transceivers
- 17 Atlantic Scientific Surge Arrestors
- Equipment and connections

6.8 ROUTINE MAINTENANCE OF THE COMMUNICATIONS SERVICE NETWORK

The IDOT Communications Service Network is the physical and service infrastructure between locations.

6.8.1 FIBER OPTIC NETWORK

The fiber optic network consists of fiber optic nodes, located along the expressway system and at other locations in District 1 for the transmission of video, data, and control signals around District 1 and to provide interconnection points to other governmental agencies, through nodal buildings and nodal cabinets. The Contractor shall maintain, under routine maintenance, fiber optic cables at each node, patch panels, fusion splices, cabinets, nodal buildings, raceway systems, and splice enclosures of the fiber optic interconnect cables located at all remote facilities and the IDOT Headquarters. Drawings showing the various nodes and the fiber optic interconnects will be made available to the prospective bidders and to the Contractor upon request. Also included for maintenance is the fiber cabinet and connections at I-290 west of Wolf Rd at PS 20.

6.8.2 REVLAC COMMUNICATIONS

The REVLAC communications scheme is triple redundant to provide prompt and continuous communications in the event of a communications device failure. The three modes of communications are: fiber, microwave radio and telephone lines.

The primary communications is conducted on the fiber system. Primary communications are provided through fiber extensions to the fiber backbone and another fiber backbone involving Illinois Tollway fiber.

The secondary communications system is the microwave radio network. The microwave radio system interconnects directly and indirectly all control nodes of the REVLAC system. The primary function of the microwave radio system is to provide reliable high-speed data transmission between all locations. The bandwidth of the microwave radio allows transmission of video from any site to any site by means of an elaborate switching network.

The third means of communications is a dial-up modem system via the telephone lines. In the event of a fiber link failure, the microwave radio system will pick up the communications traffic and the telephone modem connections will be set up as a backup communication mode.

The REVLAC building locations A, C, D, and E communicate with the IDOT ComCenter. The communications includes video (one way) and data (bi-directional) which is provided by a digital microwave radio link, repeated at the Illinois State Police Headquarters in Des Plaines to control building E. All microwave radio paths are dual channel allowing redundant data paths, selected automatically, and can provide two real time video signals simultaneously from any site to any site.

The systems consist of 23 GHz analog links between the control buildings, 6 GHz digital links from building E to the IDOT Headquarters Schaumburg tower, dish antennas, coaxial cables, waveguides, power supplies, modulators, RF Heads, State owned radio towers, a network monitoring system, and a vast array of microwave radio technology to provide the desired service.

6.8.3 REVLAC CONTROL SYSTEM

The REVLAC Control System is a network of five sets of Allen Bradley PLC-5/60 and PLC-5/80 Programmable Logic Controllers (PLC). Each Remote Control Building and ComCenter utilizes a redundant processor in their PLC system. Each system coordinates the communications and control of that specific location. Normally all five units work as an interconnected system (network) through the communications links; however, each system may operate as a stand-alone unit for its ramp or operate the entire system in the event of a loss of communication to/from Schaumburg.

6.8.4 REVLAC TELEPHONE SYSTEM

Each nodal site has four 9600-baud smart modems interconnected between the sites. Each modem is dedicated and programmed for speed dial to another node. In the event of microwave radio failure, the modems interconnect and remain connected for the duration of path loss.

6.8.5 RACS CONTROL SYSTEM

The RACS Control System is a network of Allen Bradley Control Logix 5000 series Programmable Logic Controllers (PLC). Each Building (Hut and Ramp) utilize a separate redundant CPU in its PLC system and the user interface software in the workstations in the IDOT ComCenter facilitate the remote control of the system. Each system coordinates the communications and control of that specific location. Normally all units work as an interconnected system (network) through the communications link; however, each system may operate as a stand-alone unit for its ramp or operate the entire system in the event of a loss of communication to/from the IDOT Headquarters in Schaumburg.

6.8.6 SONET SYSTEM

The SONET system network is a basic communications infrastructure which incorporates Microwave Radio, Fiber Optic, Ethernet and SONET equipment to accept, transmit, and receive broadband digital data in a SONET ring that connects the Hillside RACS building site (5300 W. Harrison St., Hillside) to the District 1 Headquarters Schaumburg ComCenter. The connection is accomplished via microwave radio through an intermediate hop at the Nordic site and via a fiber optic link through fiber of the Illinois State Toll Highway Authority System.

6.8.7 CONTRACTOR WIRED COMMUNICATIONS

The Contractor shall have the following wired telephone and data communications lines installed and fully operable by January 1, 2011:

- One (1) high speed T-1 data line between IDOT and the Dispatch Center for the Lighting and Pump Station SCADA and EMCMS connections
- One (1) dedicated "hot-line" (PLNC) between the Dispatch Center and the ComCenter
- A minimum of eight (8) incoming voice lines to the Dispatch Center available to police agencies, etc. (The Contractor shall not utilize an automated voice-answering or voice mail option for the Dispatch Center.)
- Minimum of one (1) high speed data line from the nearest EMCMS node to the EMC Contract Office for the EMCMS terminals.
- One (1) telephone lines (DID or POTS) at the Dispatch Center for dial-up access to the Pump Station's AEGIS equipment
- One (1) telephone line (DID or POTS) at the Dispatch Center for dial-up access to the Lighting SCADA
- Three (3) telephone lines (DID or POTS) at the Dispatch Center for dial-up access to the Pump Station SCADA
- One (1) telephone line (DID or POTS) at the Dispatch Center for dial-up access from the PS SCADA field processor to the PS SCADA
- Seven (7) telephone lines, (2 lines to monitor Econolite signals, 2 lines to monitor Eagle signals and 3 lines for polling the traffic signals) as applicable for Traffic Signal System, refer to Article 10.0
- Minimum one (1) ISDN line for video monitoring of the traffic signal intersections
- One (1) high speed data line between the qualified vendor facility and TSC for maintenance and support of ATMS

- Other telephone lines as necessary for Contractor communications, and Plan Record System, or other Systems as needed

The Contractor shall provide to the Engineer for approval, a proposed schedule stating when each phone line is to be installed. After installation the Contractor shall submit to the Engineer the list of the type of telephone lines, their outlet locations, applicable telephone numbers, and a contact person and telephone number for reporting problems. The Contractor is responsible under routine maintenance for installation charges, monthly billing, number change charges, and any other related telephone charges.

6.8.8 CONTRACTOR WIRELESS COMMUNICATIONS

The Contractor shall have in place, a district-wide wireless field communications system with a central base established at the Contractor's EMC Dispatch Center or other location as approved by the Engineer.

To assure a consistent and reliable transmit and receive coverage throughout the entire 4400 square mile geographic area of District 1, the Contractor shall have a multiple-location-infrastructure based, digital wireless communications system (trunked radio system with integral cellular telephone capability) as offered by Nextel™ or an equivalent provider.

To facilitate Contractor communications, timely transmission of data, inspection of work by Department personnel, and transmittal of photos of damage to state property, individual units shall be assigned as described herein. All Contractor patrolmen, dedicated personnel positions, field supervisory or management personnel, subcontractor supervisory personnel, and forty (40) Department EMC supervisory field inspection personnel and communications center personnel shall be provided units equal or better than Motorola Brute i680, as approved by the Engineer. Unlimited direct talk, voice, 2.0 megapixel camera, and Engineer approved method of photo transmission shall be provided for each assigned unit, as well as email service for specified units as agreed by the Engineer.

Cigarette lighter charger/adapters, AC recharging units in the form of cords, largest Lithium-Ion battery available, separate carry case or protector (unless flip-top model), belt carry attachment, and thirty (30) hands-free receivers equal or better than Motorola H790, meeting all requirements of state laws and designed for the approved model, shall be provided for Department units. As these units are used for field work, it may be necessary for the Contractor to replace up to five inspector units or receivers, and furnish additional new parts, holsters, chargers, adapters or batteries to all units, as necessary, during each contract year. Any necessary cables, CD with PC compatible software for the programming of numbers, name change software, and other programmable functions, and device necessary for the copying of SIMS cards, shall also be furnished to the Engineer.

Each communication unit shall be new, and models and accessory equipment shall be approved by the Engineer prior to purchase or lease by the Contractor. Following the award of the Contract the Contractor shall provide catalog cuts of the proposed unit(s). The Engineer shall agree with the Contractor on two proposed sample units for a one week trial. If a sample unit is found acceptable the Engineer shall notify the Contractor so the delivery of the new units will meet the specified dates.

The list of proposed call numbers shall be furnished to the Engineer for approval and assignment by December 1, 2010. The units shall be purchased or leased, and units delivered, ready for programming, with applicable software and cables, by December 15, 2010.

The Contractor is responsible under routine maintenance for all communication units, the monthly billing, email service provider, access and photo transmission fees, and other provider assistance as necessary for MCHD repair photo transmissions, data transfers and proper operation of the communication units.

6.8.9 EMAIL COMMUNICATIONS

The Contract Project Manager, all System Managers, Working Foreman as specified herein, Specialists, Administration Manager and assistant, Dispatch Supervisor, and other personnel as requested by the Engineer shall have an email address and access to scan email to the Department. The email service used by the Contractor shall not be a service that attaches advertising to email. By the start of the Contract the Contractor shall provide to the Engineer a list of all Contractor personnel with email addresses.

6.8.10 FACSIMILE COMMUNICATIONS

The Contractor shall have and maintain plain paper facsimile (fax) equipment at the headquarters, EMC Office, and EMC Dispatch Center, for the purpose of rapid dissemination of written information not in email form.

6.8.11 ELECTRICAL MAINTENANCE CONTRACT MANAGEMENT SYSTEM (EMCMS)

General Requirements

Successful performance of the Electrical Maintenance Contract is highly dependent upon an emergency call-out database, electrical systems inventories, and a timely, accurate flow of information regarding contract work and billing. The Electrical Maintenance Contract Management System (EMCMS), which facilitates the emergency call-out database and these functions, consists of hardware, software, and an information database to support these Contract needs. The Contractor shall maintain the existing established Department EMCMS, which shall continue into this Contract to assure operational continuity. No disruption of the instantaneously-available emergency call-out location master information to the District 1 ComCenter will be permitted.

The Contractor is required to have the complete EMCMS, including full data access through screens/reports, communication links, and all required equipment as specified elsewhere herein, in place at the EMC Office and EMC Dispatch Center for approval by the Engineer by December 27, 2010. The EMCMS entry documentation shall begin as of midnight January 1, 2011. The Contractor is allowed until January 10, 2011 to complete entry of all patrol schedules for all systems.

All items necessary to assure a functional operating system, including materials such as paper, ribbons, etc., and labor for installation/removal of equipment shall be the responsibility of the Contractor. In addition the Contractor shall provide proper office space and access to system equipment at the approved Contractor facilities.

The Contractor Administrative Manager shall respond to Department maintenance requests within one hour, providing the estimated time of repair, programming correction, or service restoration.

All costs for the EMCMS system operation, vendor maintenance agreements, programming hours, and equipment warranties, except for the existing IDOT telephone lines and power provided by the Department, shall be borne by the Contractor and included in the routine maintenance bid prices. Refer to Article 6.18 herein.

Equipment Requirements

The Contractor is responsible for establishing EMCMS communications between the Contractor's facilities and the central computer at District 1 Headquarters and for providing terminals and other peripherals for Contractor access to the system.

The Contractor shall provide:

For EMCMS Development Computer Replacement:

- Equal or better than Dell Precision T7500 Tower Workstation, per EMCMS vendor specifications, including latest version windows operating system and software. Monitor not required. Dual core Intel Xeon CPU E5503 2.0GHz, 4M L3 4.8G T/s with 3 GB DDR3 RDIMM 1333Mhz ECC and 512MB graphics card with dual monitor 2DP & 1 DVI, 500 GB SATA 3.0 Gb/s, with aDVD 16X +/- RW and Cyberlink power DVD/Roxio Creator. Including a Microsoft Office 2007.

For Contractor's EMC Office:

Minimum of three (3) shared EMCMS printers, one a dot matrix with tractor feed and one (1) workstation for:

- Each electrical System Manager
- Administration Manager
- Administrative Assistant
- EMC Field Desk

For Contractor's EMC Dispatch Center:

- Minimum of one (1) shared EMCMS printer, and three (3) workstations

6.9 CONTRACTOR IMMEDIATE RESPONSE AND REPAIR

6.9.1 GENERAL REQUIREMENTS

The Contractor is required to use as many personnel as necessary or have approved sub-contractor on-call personnel to respond to trouble calls within one (1) hour of notification and service restoration within four (4) hours or less, unless Engineer approval of a delay is granted. Permanent repairs shall be completed within twenty-four (24) hours. Tickets are required for all maintenance items.

6.9.2 REVLAC and RACS

When equipment failures occur on REVLAC or RACS equipment or other exposed electrical cables/equipment due to unforeseen events, winter weather, motorist caused damage, or from any cause whatsoever and which affect the traveling public, Contractor personnel are required to immediately respond to the scene, shut-down or safely isolate any potentially hazardous electrical condition, clear the pavement of any equipment debris resulting from the damage, take corrective measures to assure the safety of the motoring public, and coordinate the efforts to restore normal traffic operations. The REVLAC and RACS systems are to be kept operational 24/7 in automatic mode or in manual mode when repairs are required.

The Contractor is required to use as many personnel as necessary to respond to trouble calls within one (1) hour of notification and provide permanent repair to REVLAC or RACS system operations within two (2) hours or less, unless Engineer approval of a delay is granted. In some cases this may require personnel, equipment and materials to assist in the operation of the system such as manually cranking signs into position, manually cranking swing gates, manning a control building if bypassing the PLC control, manning a control building to monitor transition events, manually covering prescribed malfunctioning signs, placing barrels or barricades for failed closure devices, staging Contractor owned vehicles in place of the barrier net and all such similar work as needed to produce essentially normal functionality of the REVLAC or RACS systems to the Department and the motoring public.

When Contractor personnel arrive at the site (or depart the site) where there is REVLAC or RACS equipment, the IDOT ComCenter must be directly notified by the Contractor's dispatch center personnel. This notification includes planned work or emergency work which may or may not require an emergency lane closure.

6.9.3 OTHER ADVANCED SYSTEMS EQUIPMENT

Failures of expressway ramp gates, REVLAC fiber, intrusion alarms, power outages, servers, SONET or CCTV distribution equipment, REVLAC operations cameras, HVAC equipment at the IDOT ComCenter, and ATMS workstations, require immediate response and repair/corrective action by the Contractor.

6.9.4 COMCENTER HVAC

Proper function of the ComCenter HVAC is necessary for the numerous items of equipment in the dispatch and equipment rooms. Upon notification from the ComCenter of HVAC problems, the Contractor is responsible through routine maintenance for immediate response and repair, and if necessary providing on a 24/7 basis, qualified repair company HVAC investigations, labor, and repairs/replacements of equipment, not exceeding five-hundred (\$500) dollars per call-out. Equipment and repairs in excess of the \$500 will be paid through non-routine maintenance.

6.9.5 FIBER OPTIC CABLE REPAIRS

Immediate corrective action response and repairs are required for the fiber optic network. For transmission troubles found in the "live fiber" (fiber in use) during normal operations, the Contractor shall test the affected fiber, as necessary, to determine the source of the problem. In such cases, the Engineer may direct spot checking or complete checking of all fibers in the affected run, if the problem is suspected to be systemic to the run. Before testing of any live fibers, the patrolman shall coordinate with the users of the fiber run. After the completion of testing, but before leaving, the patrolman shall verify with the users that all video and telemetry data transmission is still working. The patrolmen shall not leave the nodal building until all user groups have checked the accuracy of data being received and video picture quality.

During any of the testing, if any fibers are found to have significantly degraded from original or most recent OTDR readings, the patrolman shall initiate a ticket to prompt further troubleshooting of the fiber. The Contractor shall check all optical connectors, all patch cords, fusion splices, and splice enclosures within that fiber run to determine where the degradation has occurred. The Contractor shall make necessary repairs to restore the system to its original operating parameters.

If a problem is found to be with an individual live fiber in the fiber run, the Contractor shall re-assign the user on the defective fiber to another fiber in the run upon approval by the Engineer. The Contractor shall test the defective fiber to identify the location of the problem. If it is found to be in accessible location, the Contractor shall repair/re-splice the fiber to restore to its original condition.

If connector appears to be damaged, the Contractor shall repair or replace optical connector in the following manner:

1. If it is a patch panel which has bulkheads with pre-connector zed pigtails and its optical connector is damaged, the entire pigtail shall be replaced with a new patch cord substituted for the pigtail and fusion-spliced to the trunk cable.
2. If the patch cord optical connector is damaged, the Contractor has the option of replacing the patch cord or replacing the damaged optical connector with a new Camille or equivalent ST connector for single-mode fiber.
3. If it is a patch panel, where the trunk cable was field-terminated with Camille or equivalent connector, the Contractor shall replace in kind.

If the bulkhead is damaged, the Contractor shall replace the bulkhead in kind.

If the optical performance has diminished due to degrading of an existing splice, the Contractor shall replace the bad fusion splice in kind. If the fiber optic trunk cable is damaged due to a broken wall, the Contractor shall clear, determine the problem and perform temporary repairs, to restore the system affected within twenty-four hours, under routine maintenance. The Contractor

shall replace the damaged section of cable from splice box to splice box (in handholes), as directed by the Engineer, under routine maintenance. The Contractor shall submit catalog cuts of all replacement material for approval by the Engineer.

6.9.6 GCM GATEWAY NETWORK

The Contractor is required to maintain the GCM Gateway Network connections to the extended fiber network (IDOT fiber and connection to Tollway fiber) that support its IDOT distribution extensions to out-of-state connections, including the associated Gig-E equipment. Immediate corrective response and repairs are required. Equipment includes Cisco Gigabit network: WS-C3750G-12E, CAT1030NG5M.

The Contractor may receive emails from the GCM Gateway Network support team using NAGIOS, notifying them of camera outages requiring immediate field response. If directed by IDOT ComCenter personnel, the Contractor personnel may be dispatched to the Traffic Systems Center to reset the Gateway system server, or post a prepared outage message to the website. Other problems may require the Contractor Advanced Systems Specialist or Field Technician to coordinate with the Engineer and visit an Illinois Tollway property to service GCM equipment.

6.9.7 BUILDING, HUT AND BASE STATION EQUIPMENT REPAIRS

Immediate corrective action response and repairs are required for reports of problems with low voltage wiring, conduit, outlets, and switches, and other electrical equipment within or at the buildings, huts, and base stations, including generators.

6.9.8 TOWER OR BASE STATION (TOWER) STRUCTURAL REPAIRS

If problems or deficiencies are found on towers or base stations (including the Hillside Base Station at the Hillside Maintenance Yard and Rodenburg Base Station at the Rodenburg Maintenance Yard as listed in Article 7.0) the Engineer shall be immediately notified. Structural problems or deficiencies are not the responsibility of the Contractor.

6.9.9 SPECIAL RESPONSE AREAS

The Contractor shall respond to emergency service requests and perform occasional scheduled inspections of Department owned equipment residing in non-EMC maintained areas of the University of Illinois Circle Campus building/roof in Chicago, the Illinois State Police District Chicago offices in DesPlaines, the Illinois Thompson Center in Chicago, the Illinois Tollway Authority Headquarters in Downers Grove, and other Tollway Authority Plazas throughout District 1. The Contractor shall provide the labor, equipment and material to perform repairs, and shall be paid through non-routine maintenance for material in excess of \$500 per call-out.

When notified by the ComCenter or by a police agency that an incident has occurred at the location, a patrolman shall immediately be dispatched to the location by the EMC Dispatch Center. Incidents may include, but are not limited to:

- All motorist caused damage
- Malfunctions which suspend normal operations
- Intrusion alarms
- Power outages
- Live exposed voltage cables
- Changeable message signs
- Failures of network (telephone, & radio)
- Events which pose a threat to safe, timely operations

The dispatched personnel shall arrive at the relevant system location within sixty minutes of notification of the incident, to assess and troubleshoot the system and/or to make the system operational. The defective equipment shall be permanently repaired as soon as possible, within 24 hours, unless approval is given by the Engineer. The Engineer shall be notified of any response by Contractor personnel.

UNIVERSITY OF ILLINOIS – CIRCLE CAMPUS - 1140 S. Paulina St., Chicago

Items to be maintained include:

- 3 Bosch Cameras with PTZ and mounts
- Proxim Radio and Antenna
- Equipment Cabinet NEMA 4X
- Linksys Switch – 8 port
- Equipment and connections
- Power Supplies
- GCM Gateway Network

Illinois State Police District Chicago Office - DesPlaines

A tower and associated transmission equipment including a 6 GHz active repeater is located at the Illinois State Police District Chicago office in Des Plaines. It is a microwave radio repeater facility for the transmission of signals between the REVLAC Control Building E and District 1 Headquarters, Schaumburg.

Items to be maintained include:

- SONET System (refer to IDOT Headquarters, Article 6.7.11)
- Microwave radio equipment, Department owned
- Backup Battery

Illinois Thompson Center (JRTC)

The Contractor shall maintain the fiber optic patch panels.

Illinois Tollway Authority Central Administration and Plazas

Items to be maintained include:

- CCTV and Associated Equipment (refer to IDOT Headquarters, Article 6.7.11)
- All Gig-E equipment
- IDOT patch panel and fiber cables

Cisco Gigabit Network Equipment/Smartnet:

- Central Admin: WS-C3750G-24TS-E, CAT0937ZOVN
- Plaza 19: WS-3750G-12S-E, CAT0936Z32Z
- Plaza 21: WS-C3750G-24TS-E, CAT1032ZJ46
- Plaza 23: WS-C3750G-12S-E, CAT1031RGPC

6.10 CONTRACTOR NORMAL CORRECTIVE RESPONSE AND REPAIR

6.10.1 GENERAL REQUIREMENTS

Unless specifically notified by the Engineer to immediately respond/repair, other equipment as listed in Article 6.0, such as CCTV, AVL, expressway ramp gates, equipment in buildings and huts, missing labels, etc., and not listed in Article 6.9, shall be handled through normal corrective action. The Contractor shall investigate items found or reported within twenty-four (24) hours and correct the defective operation or equipment with temporary repairs within forty-eight (48) hours of the investigation, followed by permanent repairs within seven (7) days, unless approval is given by the Engineer for a repair delay. Tickets are required for all maintenance items.

6.10.2 EXPRESSWAY RAMP GATES

The Contractor shall provide normal corrective response and repair for expressway ramp gates, including motorist caused damage. Sand crash barrels if damaged by motorists shall be replaced by Department personnel.

6.10.3 AVL (AUTOMATIC VEHICLE LOCATOR)

The Contractor shall respond to trouble calls regarding the AVL equipment from the IDOT ComCenter and Department personnel. This may require travel to the vehicle in question for the equipment repair, or travel to the ComCenter for supervisory control repairs. The Contractor shall contact the IDOT ETP Manager to obtain the time which the vehicle would be available for repair. Materials for AVL repairs shall be available in State Stock.

Modem installation work shall include all work necessary to install, wire, integrate, set-up all communications to the AVL server, and configure the complete system so as to provide a completely operational AVL unit in the vehicle.

6.11 REQUESTED ROUTINE WORK

Art. No.	Equipment to be Inspected	Estimated Number of Locations	Frequency/Month	Submittal
6.11.2	ComCenter DVD Inspection	1	Monthly	RWSB
6.11.8	Equip. & Network Identification	All	Monthly	RWSB
6.12	Building and Hut Inspection	15	Monthly	RWSB
6.13	REVLAC Transition Patrol	All	Monthly	NA
6.14.2	Site Maintenance – Spring, Summer, Fall	15	Monthly	RWSB
6.14.3	Site Maintenance – Winter	15	Monthly	RWSB
6.15.1	General Maintenance	All	Monthly	RWSB
6.15.2	Battery and UPS Inspection	1	Monthly	NA
6.15.3	REVLAC/RACS Bld. Floor Maintenance	8	Monthly	RWSB
6.15.4	Fire Extinguisher Maintenance	15	Yearly	RWSB
6.16.1	Tower Site Inspection PM	7	Yearly	RWSB
6.16.2	Swing Gate PM	127	April and October	NA
6.16.3	Drum Sign PM	10	April and October	NA
6.16.4	LED and Fiber Optic Sign PM	7	April and October	NA
6.16.5	Cattron PM	All	April and October	RWSB
6.16.6	Ramp Gate PM	41	April and October	RWSB
6.16.7	Barrier PM	6	April	NA
6.16.8	Control Building PM	4	April	NA
6.16.9	Microwave Radio PM	8	TBD	RWSB
6.16.10	CCTV Camera PM	143	April	RWSB
6.16.11	AVL Equipment PM	All	TBD	RWSB
6.16.12	Fiber Testing and Inspection	All	Spring	RWSB
6.16.13	Lighting SCADA Battery Replacement	All	Before June	RWSB
6.16.14	Battery and UPS Testing	All	May or before	RWSB
6.16.15	Fiber Access and Spice Box Inspection	All	See Schedule	RWSB

6.11.1 START AND COMPLETION OF WORK

When requested by the Engineer, the Contractor shall conduct routine work as specified. This work shall begin no more than forty-eight (48) hours following the initial request and shall be completed by a time as agreed by the Engineer and the Contractor.

6.11.2 COMCENTER DVD INSPECTION

The Contractor shall inspect the ComCenter DVD process video for REVLAC once per week, to confirm the transitions are recording properly. This inspection shall be scheduled on the same day of the week, for the duration of the Contract. If a deficiency is found a ticket shall be created. The repair shall be completed or equipment replaced, under routine maintenance, within 24 hours.

6.11.3 CCTV

In addition to the preventative maintenance program, cameras mounted 25 ft or lower, or cameras on lowering devices shall be cleaned upon request of the Engineer or the Department's ComCenter, when the images are not clear. The Contractor shall keep a ticket count, and will not be required to exceed twenty (20) cleanings per month.

6.11.4 FIBER LOGGING AND LABELING

When the Contractor is notified of any deficiencies/abnormalities with fiber logging and/or labeling they shall be brought to the attention of the Engineer and a corresponding ticket shall be generated. The Contractor shall be responsible for record keeping of all equipment and labeling at each node. A log book shall be maintained at each node with a list of all users of the fiber optic cable at each node and the information shall be updated after each new assignment made by the Engineer. The Contractor shall insure that all fiber strands and connectors are properly tagged and labeled at each end, and shall tag that they conform to the Department's labeling scheme. The Contractor shall perform the data entry of all changes to the existing fiber optic cable system in accordance with the D1 Standard Cable Designation Scheme which is available for review upon request.

The fiber labeling, power wiring, Ethernet, RS232 cables, blue tube cables, and coax, as designated by the Engineer, require permanent labeling from a Brady labeling machine or equivalent. A Brother P-Touch type of labeler is not acceptable.

6.11.5 LABELING OF EQUIPMENT

When missing decals are discovered or new equipment installed the Contractor shall furnish and install new decals for cameras, camera poles, chevrons, gates, aux signs, REVLAC/RACS equipment, and cabinets. Decals shall be similar to those for lighting units as specified in Article 1069.06 of the Standard Specifications.

6.11.6 CCTV VIDEO IMAGE LABELING

The Contractor shall be notified by the Engineer or the ComCenter when the CCTV video images need internal titles. Cameras shall be labeled internally through the camera or the video matrix switch for correct location name viewing.

6.11.7 REVLAC AND RACS GATES AND BARRIER STRIPING

The Contractor shall remove the existing retro-reflective sheeting, as specified by the Engineer, and install new striping, strictly following the manufacturer's instructions. The Contractor shall provide special attention to surface preparation and mounting of sheeting for proper bonding and adhesion. A maximum of 500 sq. ft. of striping material will be removed and replaced. The new striping material is furnished through State Stock and/or non-routine agreed prices.

6.11.8 EQUIPMENT AND NETWORK IDENTIFICATION AND DOCUMENTATION

The Contractor shall conduct a field survey of all network equipment maintained under this Contract such as SONET's, switches, hubs, GigE, etc., and provide a network identification for every termination/port of fiber and Ethernet, a block diagram for every location and one for the IDOT Headquarters at Schaumburg, TSC in Oak Park, the RACS system, and up to twenty (20) other locations per Engineer request between April 1, 2011 and December 31, 2011. The Contractor shall provide the information listed below. The Engineer shall provide an Excel spreadsheet with fiber assignments and IP addresses if available. The Contractor shall furnish a progress report each month in the monthly routine work submittal book.

- **Network Identification**
Servers|Workstations|Routers|Switches|Hubs|Transceivers,etc.
IP Addresses
NetBIOS/Hostnames
MAC Addresses
Description
Installed Software System Inventory
Make/Model/Serial Numbers
- **Network Topology**
Diagrams| Network Maps
Physical and Logical Diagrams
Layer 3 Networking Diagrams

All diagrams shall be on a CAD format.

6.12 MONTHLY BUILDING AND HUT INSPECTION

Once per month, the same week for the duration of the Contract, the REVLAC/RACS Field Technician shall inspect all REVLAC and RACS buildings and huts, and Hillside, Foster, and Rodenburg Base Station buildings to insure proper operating condition of all equipment and to check for graffiti. The Engineer may add additional locations to be patrolled if unsatisfactory service reports have been made, or a new building or hut is accepted for Contract maintenance.

Specific items to be checked include, but are not limited to:

- Allen Bradley PLC processors and all input and output cards; check for alarms
- Building rodent infiltration; seal any openings found
- Building site maintenance; empty trash cans
- Check for graffiti, if found create ticket for scheduled cleaning
- Building HVAC operations and temperature control
- Camera focus and image
- Electrical Service
- Check operation of generator
- Check generator diesel fuel level. If fuel level is less than one half of full level, a ticket shall be created to schedule the refill of the tank
- Check generator air filter, change if necessary
- Indicator lamps; replace as required
- Modem communications
- Phone lines
- Little Giant Ladders

6.13 TRANSITION PATROL

Once per month, on approximately the same day per month, for each month of the Contract, for the daytime reversible change (approximately 11:30 a.m.) and for the night-time reversible change (approximately 11:30 p.m.) a Contractor representative shall follow an IDOT ETP (Emergency Traffic Patrol) foreman through a complete gate operation at each REVLAC location in both inbound and outbound directions, to check equipment for proper operations.

6.14 SITE MAINTENANCE - OUTDOOR

6.14.1 GENERAL REQUIREMENTS

The Contractor shall provide general site exterior maintenance at Advanced Systems locations, to provide safe access to buildings and huts and to maintain the site in an aesthetically acceptable condition to the public. The Contractor shall keep all locations free and clear from any debris and litter at all times.

The Contractor shall submit a spreadsheet, noting the location, type of patrol or maintenance, and date work was completed, in the monthly routine work submittal book. In addition all scheduled work shall be noted on the Daily Agenda.

6.14.2 SPRING/SUMMER/FALL MAINTENANCE

Weed or grass cutting to height of three (3) inches or less, tree trimming, tree branch or brush removal and debris disposal work shall be performed for a minimum radius of 50 feet around all buildings and huts as applicable, (Buildings A, C, D, and E, Hillside, Foster, Nordic, and Schaumburg Tower buildings, Hillside RACS Ramp Building, Hillside Media hut, and any future huts as accepted for maintenance by the Department, during the Contract), twice per month in the months, April through October, and as needed for the remaining months.

6.14.3 WINTER MAINTENANCE

General snowfall maintenance shall begin within 48 hours following a 1 inch snowfall or more. The Contractor shall provide reasonable access to Buildings A, C, D, E, and the Hillside Huts, Media Hut, Foster, Nordic and Schaumburg Tower Buildings, and the Hillside RACS Ramp Building, by shoveling and plowing as necessary, and salting, all sidewalks, paths, driveways and parking areas, for the months of November through March.

6.15 SITE MAINTENANCE - INTERIOR

6.15.1 MONTHLY GENERAL EQUIPMENT MAINTENANCE

The Contractor shall provide monthly general interior site maintenance for Advanced System equipment in building locations, hut locations, the ComCenter (equipment room and all terminals and keyboards in the dispatch area), the TSC equipment area, Field Office, and the ISP/CMS facility (IDOT/ISP equipment) in Des Plaines, through routine maintenance, to keep the equipment free of dust build up, to reduce heat buildup, and prolong the life of the systems. Following manufacturers' recommendations, soft cloths shall be used to remove dust build up and compressed air shall be used to clean all keyboards. In addition, four cans of compressed air and one box of cleaning swabs equal or better than Kensington Surface Guardian Swabs shall be delivered per month to the Field Office for Advanced Systems equipment maintenance.

Verbal approval is needed from the ComCenter Supervisor prior to scheduling the maintenance work. The work can be performed in conjunction with other patrols and inspections (and may be performed at night where feasible), but should be scheduled for the same week of the month for the duration of the Contract. The Contractor Daily Agenda shall note the time of the expected maintenance of each location.

6.15.2 MONTHLY BATTERY AND UPS INSPECTION

The Contractor shall inspect the batteries of the UPS Systems, and RF transmitter once per month at Schaumburg HQ. Water levels shall be checked, add if necessary. Connections shall

be cleaned and tightened if necessary. The date of the inspection shall be listed on the daily agenda. Tickets shall be created for any problems found, and listed in the monthly routine work submittal book.

6.15.3 REVLAC & RACS BUILDING FLOOR MAINTENANCE

Upon the request of the Engineer, or when the sealed floors of the REVLAC and/or RACS buildings become dirty due to winter and/or other weather conditions the Contractor shall bring water and cleaning supplies to mop the floors. This cleaning shall be conducted a minimum of once per month.

6.15.4 YEARLY FIRE EXTINGUISHER MAINTENANCE

The Contractor shall furnish and install fire extinguishers, equal or better than Badger Fire Protection extra carbon dioxide self-expelling model B20V for any new facilities placed on maintenance during the term of this Contract.

The Contractor shall have all fire extinguishers checked for proper service and re-filled as necessary, through a fire inspection service as approved by the Engineer, a minimum of once per year, in April. It will be necessary for the Contractor to travel with the fire inspection service personnel to unlock facilities. The Engineer shall be provided an email schedule of the yearly testing, prior to the start of the work. A completed work list by date, service, and location shall be submitted in the following monthly routine work submittal book.

6.16 PREVENTIVE MAINTENANCE PROGRAMS

The Contractor is required to perform certain preventive maintenance (PM) work within certain regular intervals or within certain time limits. The following descriptions provide a basic guide for PM work, but shall not be construed as all inclusive. Preventive maintenance required by the manufacturers shall be performed in addition to these inspections. All PM work shall be in compliance with manufacturers' specifications. PM forms will be available at the Pre-Bid Meeting.

Schedules for start and completion of PM program work are important for the effectiveness of the overall system reliability. Every month, the Contractor shall submit the PM program for the following month in the monthly routine work submittal book. All PM work shall be completed within 30 days after starting, unless extensions are approved by the Engineer. All PM program work shall be scheduled on the Daily Agenda which shall list the specific type of inspection being performed (example: Roof PM).

All preventive maintenance reports and inspections shall be sent to the Engineer and Contractor Project Manager directly from the field, when follow-up work is required.

The Contractor shall submit in the monthly routine work submittal book a schedule/chart that shows all maintenance locations, preventive maintenance programs, status and date of completion for each program, including the status of all uncompleted tickets and authorizations. The Contractor shall identify items, by ticket number or authorization number, which require follow-up.

6.16.1 YEARLY RADIO TOWER SITE INSPECTION AND PM

The Contractor shall inspect the radio towers for any visual defects on the tower structure, lighting, monitoring system (where applicable), antenna, co-axial lines and wave guides, grounding system, site appearance and general condition, fencing and gates (standards per FCC title 47 Sec. 17.47) and locks. Tickets shall be created for any problems found. The date of the inspection, in June, shall be listed on the daily agenda. The Contractor shall submit the inspection reports using Log A1 in the monthly routine work submittal book. Also note these requirements are applicable to the base stations at the Hillside and Rodenburg Maintenance Yard locations per Article 7.0.

6.16.2 BI-YEARLY SWING GATE PM (FOR REVLAC AND RACS)

Swing gate PM shall be performed twice a year, in April and October. Lubrication shall be performed once per year as a minimum. No form is required, however, this work shall be performed in presence of an IDOT inspector.

- Open control cabinet and clean out debris or corrosion
- Check for fluid leaks in the cabinets and correct, if any
- Check oil level in the drive train and top off as required by the manufacturer's requirements
- Hand clean control cabinets with biodegradable detergent and water
- Replace gate tip if more than 20% of the tip is damaged, or when directed by the Engineer
- Check proximity limit switch alignment and bracket conditions
- Check electrical connectors and wiring condition
- Check drive and control components
- Lubricate components with lubricants as listed in maintenance manual page 6-1
- Lube flange bearings only if seal failure is noticed
- Lube chain and sprocket with high grade aerosol chain lube
- Repair or replace speed reducer if it leaks oil
- Check that panel doors are closed and padlocked
- Operate the gate automatically to check for shear pin damage
- Operate the gate using the hand crank to check for operation

The swing gates should extend and retract smoothly, without excess vibration or noise, stop quickly at extended or retracted positions, and, when in remote operation, provide prescribed status indicator and warning light indications.

All swing gates shall be washed. Washing shall be performed with a pressure washer and process and cleaning solutions recommended by the reflective sheeting manufacturer. Washing shall not take place when the temperatures are expected to drop below freezing. Residual cleaning solution shall not be left on the pavement after the cleaning operation. Any cleaning solution shall be removed before traffic is allowed to travel on the pavement.

During the second inspection only, in October, all heaters shall be checked for proper operation.

6.16.3 BI-YEARLY ROTATING DRUM SIGNS PM

All rotating drum signs shall be cleaned twice a year, in April and October. No form is required, however, this work shall be performed in presence of an IDOT inspector.

- Open control cabinet and clean out debris
- Check for fluid leaks in the cabinet and correct, if any
- Check oil level in the drive train and top off as required by manufacturer's specifications
- Lubricate all bearing surfaces as needed, at least once per year
- Lubricate grease fittings and oil reservoir on motors
- Oil chains
- Observe coupling operation, tighten all bolts and set screws
- Clean sign housing
- Hand clean control cabinets with biodegradable detergent and water

6.16.4 BI-YEARLY REVLAC AND RACS LED AND FIBEROPTIC SIGN PM

All REVLAC and RACS auxiliary signs, dynamic message signs, Chevron signs, and fiber optic signs shall be inspected twice a year, in April and October. No form is required, however, this work shall be performed in presence of an IDOT inspector.

- Open access covers and clean out any accumulation of bird and insect nests, dirt and dust, or corrosion
- Clean and inspect interior and exterior sign housing
- Check and adjust voltage to LED power supply
- Clean all associated control cabinets with biodegradable detergent and water
- Clean LED signs with a cloth and biodegradable detergent and water
- Relamp fiber optic sign with halogen lamps and clean housing, once per year, at the time of April inspection
- Inspect lamp housings for corrosion and damage and replace, if necessary

All fiber optic signs shall be cleaned and relamped in April of each year.

6.16.5 BI-YEARLY REVLAC CATTRON PM

The Contractor shall conduct a PM program twice per year, in April and October, for all Cattron remote controllers and their chargers at the Emergency Traffic Patrol (ETP) building. Since the units are needed daily by ETP for REVLAC operations, the PM shall be performed on a maximum of six units at any one time and with maximum turn-around time of one business day, returning the units the same evening. The units shall be tested for battery voltage; transmitting and receiving ability; power; modulation; and RX sensibility. The batteries shall be replaced, as needed.

If any unit is found to be defective, the unit shall be replaced with a spare unit until the repairs are completed. Tickets shall be issued for all defective units and reported in the monthly routine work submittal book.

6.16.6 BI-YEARLY RAMP GATE PM

All gates installed on the entrance ramps to expressways shall be operated and tested bi-yearly, in April and October, in presence of an IDOT inspector. In addition all gates shall be hand cleaned with biodegradable detergent and water. No form is required; however, a summary of the ramp gate tickets created shall be included in the April monthly routine work submittal book.

6.16.7 YEARLY RESTRAINING BARRIER PM

Barrier PM shall be conducted once per year, in April. No form is required, however, this work shall be performed in presence of an IDOT inspector.

- Inspect all control cabinets, equipment access covers and hinged opening for proper closure (bolted or padlocked)
- Open control cabinets and clean out debris or corrosion
- Hand clean control cabinets and reflective strips with biodegradable detergent and water
- Check for fluid leaks in the cabinet and correct, if any
- Lubricate pillow block and idler sprocket bearings with multi-purpose lithium grease, NLGI No. 2, or equivalent.
- Check oil level in the drive reducer and fill with SAE No. 20 motor oil, if necessary.
- Lubricate drive chains semiannually using an aerosol chain lubricant spray (WD-40 or similar compounds are not acceptable).
- Clean tower via gas powered pressure washer
- Check net condition and positioning and check for damage or vandalism
- Check wire condition and terminations
- Open tower cover doors and hinged openings, clean, check drive chain and sprocket alignment and wear, counterweight cable attachment and general condition and check for oil leaks
- Check tower cover weather seal for wear or damage
- Check limit switches and actuators; adjustments, clearances, and secure mounting
- Check barrier net cables conditions, for tautness/tension and proper height
- Check stabilizer foot pads (replace worn or missing pads)

- Check inside of tower and cross ramp structure for accumulation of debris, dirt, dust, corrosion, animal nests, and excess grease
- Lubricate per maintenance manual section 4-5

The restraining barrier should run smoothly, without excess vibration or noise, stop quickly at its raised or lowered positions, and, when in remote operation, ensure prescribed status and warning light indications are working.

6.16.8 YEARLY CONTROL BUILDINGS, COMMUNICATION BUILDINGS, AND SYSTEMS PM

A preventive maintenance program shall be conducted once per year, in April, for all REVLAC and RACS buildings, all huts, base station buildings, IDOT Headquarters Advanced System equipment, and ISP/CMS facility (Des Plaines) Advanced System equipment. No form is required, however, this work shall be performed in presence of an IDOT inspector.

Check refrigeration:

- Replace air filter
- Inspect and clean indoor coil, drain pan, and condensation drain line
- Inspect and clean blower motor and wheel
- Check electrical connections for tightness
- Check controls for proper orientation
- Inspect refrigerant tubing connections

Fans:

- Inspect and tighten bolts and set screws
- Inspect belt wear and alignment
- Clean exterior surfaces
- Replace filters
- Inspect and lubricate bearings if needed
- Check for proper control/line voltage and operation on supply/exhaust fan starters

Switchboards:

- Manually open and close breakers
- Check for torque values in secondary section of bus splices and connections
- Check for proper ammeter/voltmeter values

Panel boards:

- Inspect for moisture damage
- Replace any deteriorated insulation material
- Clean any accumulation of dust or dirt
- Inspect all connections for heat or other damage of loose connections
- Operate mechanical components
- Clean and dress copper electrical contacts
- Operate circuit breakers
- Replace burned out indicating lights

Transformers:

- Clean excessive dirt on windings & insulators

Automatic Transfer Switches:

- Inspect wiring and connections for tracking, overheating, and deterioration
- Tighten control circuit wiring terminals
- Check for free movement and contact continuity in manual switches
- Adjust time delay settings as necessary
- Clean or replace main, arcing, and auxiliary contacts
- Tighten lug connections and mounting insulation bolts

- Perform transfer operation
- Calibrate phase and voltage sensitive relays
- Clean and remove accumulated dust and dirt
- Check for proper operation or door closure, locking bars, and mechanism

Batteries:

- Check and record AC and DC voltages of each cell
- Tighten nuts/bolts
- Clean surfaces
- Check AC/DC power converter charger (if applicable)

Ethernet Network:

- Check Cisco mux
- Check fiber media converters and switches
- Clean and remove accumulated dust and dirt
- Clean filter
- Check Hirschman Fiber/Ethernet transceivers

6 GHz Microwave Radio System:

- Clean outside and front panel of case
- Tighten cable connections
- Measure and record operating parameters
- Measure and record transmitter RF frequency
- Measure and record receiver IF frequency
- Measure and record receiver AGC voltage
- Check dehydrator

23 GHz Microwave Radio System: (not applicable for ISP/CMS facility)

- Measure and record AGC voltage level
- Measure and record transmitter output power and frequency
- Tighten loose fasteners and replace missing hardware
- Check and replace indicator lamps
- Inspect cable for wear or fraying
- Clean painted surfaces and repair as necessary
- Check mounting hardware and guy wires of antennas, masts, or towers
- Measure and record transmitter gun current

Modems Microwave Radio System:

- Remove dust from internal components with soft brush and low pressure air/vac

Antennas Microwave Radio:

- Check tightness of hardware on mount, shroud, radome, and feed
- Inspect antenna and repair when necessary

Remote Control (Cattron) System: (not applicable for ISP/CMS facility)

- Check fuse resistance and replace when necessary
- Check fuse holders for corrosion and clean when necessary
- Check primary power source for proper readings
- Check control transmitter, receiver/decoder, relay output rack for loose bolts/screws/clamps
- Check fuses, holders, resistors, and transformers for over heating
- Visually check antenna, mounting devices, cables and connectors
- Conform receiver and transmitter in the system are aligned on the same frequency

Gate Arm Heating System for REVLAC:

- Check for proper settings, operation, and LED indication

CCTV: (not applicable for ISP/CMS facility)

Patrolmen shall inspect all equipment for cleanliness and proper operation, and check various levels and settings.

Check for alarms on the following equipment:

- iMPath
- Optelicom
- Meridian
- Bosch

Controller for Tower Lights:

- Check and clean

PLC Servers:

- Check operations

DMS Signs: (RACS ramp buildings and Hillside Hub)

- Check media converter
- Check fiber transceiver

Enclosures:

- Blow dirt out of programmable controllers, I/O modules & power supplies with compressed air
- Blow dirt out of T-60 with compressed air
- Brush dust & construction debris off of the I/O racks, wire troughs, & horizontal surfaces
- Brush dust and construction debris off of the T-60 and other horizontal surfaces
- Vacuum dust and construction debris out of cabinets
- Wipe dirt off of edges of doors and door frames
- Check ground bus connections and bonding wires and lugs for tightness and integrity
- Check screws on AB 1771-I/O swing-arms for tightness
- Check screws on terminal boards for tightness
- Test Random Access Memory (RAM) function
- Verify alarms are updating properly
- Verify hard drive is functioning normally
- Verify screen brightness is within normal parameters
- Verify PLC-5 program backup is current and password protected
- Clean and inspect air filter
- Check bonding wires and lugs for tightness and integrity
- Check communication cable integrity
- Check alarm LED indicator lamp on AB I/O chassis

Roof Inspection and Repair for all Buildings and Structures (in April of each year)

- The Contractor shall thoroughly clean the roof surface of dirt, debris, and contaminants.
- The Contractor shall conduct a full roof and flashing inspection on all buildings and structures, by accessing with ladder, and physically walking the roof, checking for leaks or deterioration. Any problems found shall be noted on a Ticket for repair.
- Repair items as found:

Small Holes and Cracks: Clean surface, apply mastic (roof cement) 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2 to 4 inches beyond.

Large Holes and Cracks: For damaged areas larger than ¼" repair, clean surface, use self-adhering SBS Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A coating of mastic (roof cement) shall be applied over all repaired areas.

Loose or Dry Laps, Fishmouths, Buckles, Wrinkles, Ridges: Cut defective material back to an adhered area. Repair area as needed with mastic and/or membrane and mastic as stated above.

Loose Mechanical Attachment, Termination Bar: Remove loose fasteners. Re-secure base flashings (or new flashing material) through tin discs of a larger diameter or fastened to an adjacent location (new hole).

General Items:

- Replace or repair corroded conduit, junction boxes and connectors
- Replace or repair damaged weather stripping and/or minor leaks
- Replace batteries in the surge arresters, building clocks, and other equipment, per manufacturers' specifications
- PLC batteries to be replaced in April of each year
- Wet mop floors with water and biodegradable cleaner, in Buildings A, C, D and E
- Check heaters for correct operations, note problems on tickets
- Check door operations, note problems on tickets

6.16.9 YEARLY MICROWAVE RADIO PM

The Contractor shall perform a microwave radio preventive maintenance inspection at REVLAC buildings A, D, and E, ISP/CMS facility, and Hillside, Nordic Schaumburg buildings once per year, on a date as approved by the Engineer. The Contractor shall address any outstanding alarms and perform repairs as needed. The PM shall include the measurement and check, as applicable, of the following parameters by factory authorized and trained personnel:

- TX Crystal Frequency
- RX Crystal Frequency
- TX Output Power
- Gunn Current
- Input Voltage
- Video Input
- Audio Input
- AGC Level
- Receiver Frequency
- RX Carrier

No form is required; however, a summary of the tickets created shall be included in the monthly routine work submittal book.

6.16.10 YEARLY CCTV CAMERA PM

All CCTV cameras shall be inspected once per year, in April. No form is required; however, a summary of the tickets created shall be included in the monthly April routine work submittal book.

- Clean camera lens and domes.
- Refill camera washers, if equipped
- Clean camera number labels, replace if damaged or missing
- Verify camera operation and correct for picture and control functions
- Provide Excel spreadsheet with all camera labels and locations

6.16.11 YEARLY AVL EQUIPMENT PM

Preventive maintenance on AVL equipment in each vehicle and covered under this contract is required once per calendar year, as mutually scheduled by the Contractor and the Engineer. Preventive maintenance shall include: reading RF power out, reading SWR and impedance of both receive and transmit antennas, check for and repair any breaks/shorts and other damage of all cables, check condition of all fuses and fuse holders, check and clean all connections (at antennas, at radio modem, at power connection, at GPS receiver, etc.), check data connectivity with respect to the system, check reception of GPS antenna and receiver, and clean any user interface appurtenances.

The Contractor shall submit an annual report, following the inspection, to summarize any changes or modification work performed, on-going problems, and to verify spare equipment inventory. This information and a list of tickets created shall be included in the monthly routine work submittal book.

6.16.12 YEARLY FIBER TESTING AND INSPECTION

The Contractor shall annually test 10% of all, randomly chosen, "dark" fibers (fibers not in use), end-to-end, with a laser light source, a power meter and an OTDR at both 1310 and 1500 nm wavelengths. The annual testing shall be performed in spring of each year, unless approved otherwise by the Engineer. The results of the traces shall be submitted to the Engineer in the monthly routine work submittal book. The test procedure shall comply with ANSI/TIA/EIA-569-A, Annex H, "Optical Fiber Performance Testing" and with ANSI/TIA/EIA-526-7, "Method 1: Optical Power Loss Measurements of Installed Single Mode Fiber Cable Plant." The Contractor shall also check for loose connectors and repair if necessary.

6.16.13 YEARLY LIGHTING SCADA BATTERY REPLACEMENT

The Contractor shall replace the lithium battery in each CPU of the FIUs and the back-up battery pack in each FIU of the lighting SCADA system, for equipment located in the IDOT ComCenter, in April 2011. The Contractor shall submit catalog cuts of the replacement battery packs for Engineer approval, prior to installation. Refer to Lighting SCADA requirements in Article 7.5.

6.16.14 YEARLY BATTERY AND UPS TESTING

The Contractor shall employ a factory authorized service company to perform an inspection and preventive maintenance at the ComCenter on the UPS, its transfer switch, and its battery and the battery charger of the UPS Systems and RF transmitter. The comprehensive inspection shall be conducted before June of each year and shall include:

Perform initial and final voltage and current checks at each stage

System in bypass and de-energized:

- Check all components

System in bypass and energized:

- Check all alarms, measure and adjust critical setting

System energized and in normal:

- Perform short-term (2 minute) discharge to evaluate battery condition

The Contractor shall obtain a detailed service report from the service engineer. In addition to the readings the report shall note any deficiencies found and/or service recommendations. The Contractor shall submit the original service report in the monthly routine work submittal book. (Any necessary repairs shall be performed through a non-routine work authorization.) Tickets shall be created for any problems found. The date of the inspection(s) shall be listed on the daily agenda.

6.16.15 YEARLY FIBER ACCESS AND SPLICE BOX INSPECTION

The Contractor shall provide the labor, equipment and material to field identify, inspect handholes, access points and provide a GPS location of all access points and splice locations. The Contractor shall inspect splice boxes for leakage and seal degradation. Contractor shall enter tickets for all damaged splice boxes, fiber trays and fiber cable including any damage to junction box and or handhole.

The Contractor shall perform this work in year 2011 for Cook county only, starting on I-290/IL 53 which shall be completed by the end of April, followed by the Kennedy which shall be completed by the end of June, followed by I-55 which shall be completed by the end of August and lastly I-57 which shall be completed by the end of October.

For year 2012, if this Contract is renewed, this work shall be performed for DuPage and Will counties, starting on I-80 which shall be completed by the end of April, followed by I-55 which shall be completed by the end of June, followed by I-290/IL 53 DuPage which shall be completed by the end of August.

No form is required; however, a summary of the tickets created shall be included in the applicable monthly routine work submittal book.

6.17 SOFTWARE MAINTENANCE SUPPORT

For the duration of this Contract, and if renewed until December 31, 2012, the Contractor shall secure a commitment for software maintenance support specialty services with the original software developer, Engineered Software Products of Lawrenceville, GA (or an approved alternate) for the Advanced Systems for emergency trouble shooting expertise and for the modification of the existing system as may be necessary.

The principal for Engineered Software Products is Mr. D. Grib Murphy, 770-682-8259. A letter of intent to provide these services is required from Engineered Software Products (or an approved alternate) to be presented to the Engineer at the Pre-Construction Meeting.

The following chart indicates software which shall be maintained and licenses renewed under this Contract. If this Contract is renewed the maintenance support agreements and licenses shall be extended until December 31, 2012, as incidental to routine maintenance.

Rockwell Part Number	Serial Number	Software Description	Version	Expiration Date	IDOT Use
9357DNETL3D	1235020855	RSNetworkx for DeviceNet	4.01.00	31-Mar-11	RACS
9357DNETL3D	1235020856	RSNetworkx for DeviceNet	4.01.00	31-Mar-11	RACS
9357DNETL3D	1235020866	RSNetworkx for DeviceNet	4.01.00	31-Mar-11	RACS
9357DNETL3D	1235020854	RSNetworkx for DeviceNet	4.01.00	31-Mar-11	RACS
9357CNETL3D	1163019247	RSNetworkx for ControlNet	4.01.00	31-Mar-11	RACS
9357CNETL3D	1163019248	RSNetworkx for ControlNet	4.01.00	31-Mar-11	RACS
9357CNETL3D	1163019258	RSNetworkx for ControlNet	4.01.00	31-Mar-11	RACS
9357CNETL3D	1163019246	RSNetworkx for ControlNet	4.01.00	31-Mar-11	RACS
9324RLD300ENED	1203023898	ControlLogix & RSLOGIX 5000	11.11.00	31-Mar-11	RACS
9324RLD300ENED	1203023899	ControlLogix & RSLOGIX 5000	11.11.00	31-Mar-11	RACS
9324RLD300ENED	1203023897	ControlLogix & RSLOGIX 5000	11.11.00	31-Mar-11	RACS
9324RLD300ENED	1203023909	ControlLogix & RSLOGIX 5000	11.11.00	31-Mar-11	RACS

9324RLD300ENED	1203023859	ControlLogix & RSLOGIX 5000	11.11.00	31-Mar-11	RACS
9701VWSCWAENE	2524000143	RSView SE Client	2.10.00	31-Mar-11	RACS
9701VWSCWAENE	2524000142	RSView SE Client	2.10.00	31-Mar-11	RACS
9701VWSCWAENE	2524000106	RSView SE Client	2.10.00	31-Mar-11	RACS
9701VWSCWAENE	2524000107	RSView SE Client	2.10.00	31-Mar-11	RACS
9701VWSCWAENE	2524000108	RSView SE Client	2.10.00	31-Mar-11	RACS
9701VWSS100AENE	2527000100	RSView SE Server 100 Display	2.10.00	31-Mar-11	RACS
9701VWSS100AENE	2527000101	RSView SE Server 100 Display	2.10.00	31-Mar-11	RACS
9701VWSTENE	2529000103	RSView Studio for RSView Enterprise	2.10.00	31-Mar-11	RACS
9355WABGWENS	1006010204	RSLink Gateway Software	2.40.01	31-Mar-11	RACS
9324RL5300ENE	1112063372	RSLogix 5	5.20.10	31-Mar-11	REVLAC
9324RL5300ENE	1112063372	RSLogix 5 upgrade Ver. 6.0	6	31-Mar-11	RACS
9357CNETL3	1163019246	RSNetWorx Update	4.11.00	31-Mar-11	RACS
9357CNETL3	1163019247	RSNetWorx Update	4.11.00	31-Mar-11	RACS
9357CNETL3	1163019248	RSNetWorx Update	4.11.00	31-Mar-11	RACS
9357CNETL3	1163019258	RSNetWorx Update	4.11.00	31-Mar-11	RACS
9701VWSCWAENE	2524000142	RSView SE Client 3.00.01	3.00.01	31-Mar-11	RACS
9701VWSCWAENE	2524000143	RSView SE Client	3.00.01	31-Mar-11	RACS
9701VWSS100AENE	2527000100	RSView SE Server 100 display	3.00.01	31-Mar-11	RACS
9701VWSS100AENE	2527000101	RSView SE Server 100 display	3.00.01	31-Mar-11	RACS
9701VWSTENE	2529000103	RSV Studio for RSV Enterprise	3.00.01	31-Mar-11	RACS
930125E3353	1476004195	RSView32 Runtime 5k			REVLAC(S)
9355WABENE	1008079409	RSLink Professional	2.41.00-ENE		REVLAC(S)
930125E3353	1476004196	RSView32 Runtime 5k			REVLAC(C)
9355WABENE	1008079415	RSLink Professional	2.41.00-ENE		REVLAC(C)
930125E3353	1476003669	RSView32 Runtime 5k			REVLAC(A)
9355WABENE	1008084954	RSLink Professional	2.41.00-ENE		REVLAC(A)
930125E3353	1476004198	RSView32 Runtime 5k			REVLAC(D)
9355WABENE	1008079417	RSLink Professional	2.41.00-ENE		REVLAC(D)
930125E3353	1476004197	RSView32 Runtime 5k			REVLAC(E)
9355WABENE	1008079416	RSLink Professional	2.41.00-ENE		REVLAC(E)

Key: S =Dist 1 ComCenter/Schaumburg, A=REVLAC Bldg A, C=REVLAC Bldg C, D=REVLAC Bldg D, E=REVLAC Bldg E

6.18 WARRANTY AND MAINTENANCE AGREEMENTS

The Contractor shall obtain a warranty and maintenance agreements for the following equipment and software for the duration of this Contract. If this Contract is renewed the warranty and maintenance agreements shall be extended until December 31, 2012, incidental to routine maintenance. A complete list of Cisco equipment can be provided at the pre-bid meeting.

REVLAC and RACS systems

Name: AB Rockwell Software support and updates
 Contact: Revere Electric or Englewood Electric Supply
 Obtain: Annual support agreements for Rockwell software listed in Article 6.17
 Expires: 3/31/11

Nordic Tower, REVLAC Buildings A, C, D, and E, Hillside Hub

Obtain: Uninterruptible Power Supplies (UPS) Maintenance Agreements
 with next business day field response

SmartNet coverage for all CISCO Equipment.

Name: SBC or CISCO Authorized Service Vendor
 Contact: Ken Barnum, 217-527-2037 (or other CISCO authorized service vendor)
 Obtain: Software Extended Support Maintenance Agreement for 24/7 coverage and 4 hour equipment replacement delivery

Expires: 3/31/11

District 1 Microwave Radio Hillside, Nordic, D1 HQ, REVLAC Bldg E, ISP/CMS DesPlaines

Name: Aviat U.S. Inc.
Research Triangle Park
637 Davis Drive
Morrisville, NC 27650

Contact: John Kingsley, 630-762-3730, John.Kingsley@Aviatnet.com
Obtain: One year extended warranty
Expires: 3/31/11

District 1 AVL Equipment; base stations, controller, modems, and radios

Name: IP Mobile Net
Contact: David Birarda, 604-937-5984, or other IP Mobile Net Authorized Vendor
Obtain: Extended software and hardware support maintenance agreement
Expires: 12/31/10

District 1 AVL Equipment; radio removals, re-installations and new installations

Name: Chicago Communications
Obtain: Support maintenance agreement for duration of contract
Contractor may have agreement for per unit billing

District 1 Storm Warning and Records Management System (SWARMS)

Name: Time Business Systems
Contact: John Naatz, 630-827-1800, or other Time Business Systems Authorized Vendor
Obtain: Maintenance agreement with 24/7 software support and field response during business hours
Expires: 3/31/11

The Contractor shall provide copies of the above list and any other signed maintenance agreements specified in this contract, with contact name and telephone number, all agreements term limits and details of equipment and response coverage, and monthly or yearly cost to the Contractor, by the first Pay Meeting of each year (if this contract is renewed). Letters of intent shall be submitted to the Engineer at the Pre-Construction Meeting and prior to the EMC renewal.

EMCMS Vendor Maintenance

Only a Department approved maintainer may perform any changes on the EMCMS. To assure security and integrity of the system, the Contractor shall use the current maintainer of the EMCMS, Xsys Inc., 653 Steele Drive, Valparaiso, IN. 46385 for the duration of the Contract. Bidders will need to contact Xsys, Inc. (telephone 219-477-4816) to obtain a sample contract and cost estimates.

The Vendor shall provide maintenance and operational support for all hardware (IDOT and Contractor owned or leased), for the server/operating system for the database servers and its OS, including communications hardware between the servers and all remote workstations, all software, the back-up drive unit, and information as carried in the database. Normal service restoration shall be within twelve (12) hours, except as otherwise permitted by the Engineer.

Maintenance requirements shall include daily on-line monitoring of system and equipment status, and daily data back-ups by qualified personnel, with preventive maintenance or component replacement as required to forestall preventable system failures. A dedicated telephone line shall be allowed into the server at the Schaumburg IDOT Headquarters for use by the Contractor furnished programmer/service technician, as approved by the Engineer.

Operational vendor support shall include two hundred and fifty hours of programming support per year for adjustments to system programs to address system malfunctions and occasional

modifications or additions to the tables, screens, and reports employed in the system. An accounting of the time utilized shall be submitted in the monthly routine work submittal book. User documentation, as existing, and as developed during the course of this Contract shall be provided to the Contractor and the Department.

Equipment and Software Warranties

The Contractor shall obtain and continue the EMCMS equipment and software warranties for the duration of the Contract starting January 1, 2011 and ending December 31, 2011. If this Contract is renewed the warranties shall be extended until December 31, 2012. Items for coverage include software, the server/operating system for the database servers and its OS, communications hardware between the servers and all remote workstations, and the back-up drive unit. The Contractor shall provide copies of all warranty agreements to the Engineer at the January, 2011 (and again in January, 2012 if this Contract is renewed) pay meeting.

EMCMS Screens and Reports

The following EMCMS screens and reports are to be maintained by the Contractor. This is an approximate list, however, and items may be added or deleted at any time. With the exception of the authorization letters as issued, the Contractor is responsible for the data entry in this listing.

- Ticket View/Entry
- Ticket History Look-up
- Ltg ticket MCHD Look-up
- Patrol Schedules
- Pay Item Listing
- ComEd Info Entry
- Owner/Maintainer By Intersection
- OFF RM Locations
- ON RM Locations
- Location Locate
- Ticket Summary – All
- Ticket Summary – Not Completed
- Ticket Screen Report
- Ticket Chronology – All Systems
- Location View
- Location Update
- RM Status
- Pay Item Letter Entry/View
- Patrol Schedule Report
- Agreed Price Letter Entry/View
- Patrol Exceptions Report
- Vendor Letter Entry/View
- Print Pay Item Letter
- Quote Letter Entry/View
- Print Agreed Price Letter
- Log Invoice Received
- Print Vendor Letter
- SS Screens
- Non-State Owned Intersections Report
- Print TS MCHD Statement
- Print Ltg MCHD Statement
- Print Surv MCHD Statement
- Print Quote Letter
- Print Quote Letter Summary
- Print Invoice
- Letters Ready to be Logged

- Outstanding Work Report
- All Transmitted Authorizations
- All Authorization Letters
- SS Reset SS Quantities
- CWL per Auth. Letter
- Supervisory Approval/Auth. Letter
- CWL Summary
- Work Compl/Not Apprv or Not Invoiced
- Approval to Transmit Pay Item Letter
- Vendor Payment Status
- EMC Budget
- EMC Work Type Budge
- EMC Work Type Category Entry
- Cable Locate Entry
- Auth. Ready for Supervisor Review
- Tech Pay Item Letter Mgmt
- Tickets Completed Count
- Tickets Not Completed Count
- Location Names Update
- Auth. Letters Transmitted by Date
- Update Pay Item Usage
- Maintain RM Monthly Payment
- Maintain MCHD Monthly Claim
- Police Agency Entry/Report
- Category Report
- New Location Street Names
- Owner Entry/Report
- New Location Cross Reference
- Maintainer Entry/Report
- MCHD Chronology
- MCHD Claims Collections/Month
- MCHD Log Entry
- MCHD Accident Report Request
- Maintain County Code
- Pay Item Usage
- Pay Item Summary
- Other Screens as Added to the System

If system upgrades of hardware or software are necessary to assure continuity of service and vendor maintenance support, the Contractor shall propose necessary upgrades to the Engineer for approval. The costs for the necessary upgrades and installation, if approved by the Engineer, will be paid through non-routine maintenance under agreed price, from budget allowance Pay Item GV01 (\$75,000). Upon approval by the Engineer, the Contractor shall furnish and install upgrades, and care shall be exercised to assure the preservation of system data.

6.19 CONTRACTOR FURNISHED MATERIALS, EQUIPMENT, AND LABOR

The Contractor shall furnish the minimum material and equipment listed below. The equipment and labor necessary for transportation, removal, installation, or re-installation of the items listed below is furnished by the Contractor and paid through routine maintenance bid items. (Also the Contractor is responsible, through routine maintenance, for the equipment and labor necessary for transportation, removal, installation, or re-installation of all Non-Routine Furnish Only Pay Items listed herein).

The Contractor shall provide an inventory of the material used in the monthly routine work submittal book.

Usage quantities from a prior contract year are shown in parenthesis, however, this information is provided to bidders for information purposes only, and is not provided as an estimate of expected future Contract usage.

- Barrier reflective tape (8) minimum required 4
- Building lighting and lamps, inside and outside (10)
- Camera Surge Protection (10) minimum required 5
- Cattron batteries (10) minimum required 4
- Circuit breakers less than 40A (1)
- Contactors less than 40A (3)
- Cleaning materials and solution, power washing equipment
- Decals, (50) for gate numbering, cameras, poles, aux signs, and chevrons minimum required 24
- Fuses and switches (60)
- Gate tips (50) minimum required 24
- Indicator lights and lamps
- Photo cells (5) minimum required 3
- Phone modems (5)
- Relays (20)
- Shear pins and bushings (100) minimum required 25
- Snow removal supplies, salt
- Wire terminations
- Proximity Switch
- Timing delay relays
- Miscellaneous items \$2000 or less each in value to replace defective or malfunctioning or non-operational equipment, software, or materials which do not meet manufacturers' specifications

6.20 DEPARTMENT FURNISHED MATERIALS AND EQUIPMENT

The materials and equipment as listed below shall be made available to the Contractor by the Department for routine and non-routine maintenance work, however, the labor and equipment necessary for transportation, removal, installation or re-installation, plus shipping, mailing, and handling charges are paid through routine maintenance bid items.

- AVL units
- Barrier crash detector
- Barrier dragnet assembly
- Barrier tape cartridges
- Cameras, Camera Assemblies, Camera Pole
- Changeable Message Sign Contactors
- Equipment from State Stock
- Gig-E switches
- LED Chevron, Auxiliary, Lane Usage, Gore and Barrier Signs

- Monitors
- Motors for Changeable Message Signs
- Ramp Gates
- SM/MM Fiber Transceivers
- Swing Gate Arms
- Swing Gate Capstan and bracket assembly
- Swing Gate Controller
- Swing Gate Drivetrain Assembly
- Swing Gate Transmissions with Motors
- Turret Head Position Switches
- Video Communications Chassis Rack
- Video Decoders and Encoders

Equipment as listed above and other additional equipment in State Stock shall be removed, installed, and/or re-installed, shipped, mailed or handled by the Contractor through labor paid as incidental to routine maintenance bid items. State stock will be replenished as needed and approved by the Engineer.

ARTICLE 7.0 -- LIGHTING, NAVIGATION AND SIGN ILLUMINATION SYSTEM

7.1 SYSTEM DESCRIPTION AND MAINTENANCE RESPONSIBILITIES

The lighting, navigation and sign illumination system (Lighting System) consists of highway lighting, underpass/ tunnel lighting, navigational lighting, and sign illumination; potentially 550 independently controlled installations on the expressways, primary highways, and navigation channels in District 1. These installations include various types of lighting fixtures and lamps, lenses, reflectors, shields, poles, mast arms, high mast towers with associated equipment, mounting devices, supporting unistrut (U-channels), step-down or buck-boost transformers, ballasts, T-bases, decals, mile markers, cables, cable brackets, foundations, conduit, control devices, radios, lighting cabinets, fenced enclosures, access gates including locks, above ground cable splice boxes, exposed conduit, uniduct, facility outdoor lighting equipment, fixtures mounted on fixed bridges, piers and abutment walls, lighting SCADA equipment, and other lighting appurtenances owned by the State of Illinois and under jurisdiction of the Department.

A list of current lighting locations is found in Section 3.

All items as listed in the system description herein shall be maintained under routine maintenance, unless stated otherwise herein. Also refer to Article 4.0 for other maintenance responsibilities and Article 2.0 for the bidding quantities.

7.2 LIGHTING SYSTEM ROUTINE MAINTENANCE PAY ITEMS

The routine maintenance pay items for the lighting system are as follows:

L-1, Lighting System – On-Expressway: Lighting system locations on Interstate Highways and their extensions leading in to State and/or US Routes

L-2, Lighting System – Off-Expressway: Lighting systems at off-expressway locations, where the number of luminaires at the location are greater than 8

L-3, Lighting System – Other Lighting: Lighting system locations on State maintained routes, where the number of luminaires at the location are less than or equal to 8

The luminaires at L-3 locations may be mounted on combination traffic signal posts and/or on light poles and/or on towers and/or on navigational structures, and/or in an underpass and/or on sign structures as shown in the List of Locations.

7.3 RESPONSE AND REPAIR TIME REQUIREMENTS

Article 4.0 discusses general response requirements of routine maintenance. The following chart lists routine maintenance maximum response time, service restoration, and permanent repair times specifically allowed for the Lighting, Navigation and Sign Illumination System.

Incident or Problem	Service Response Time	Service Restoration Time	Permanent Repair Time
Control cabinet out	1 hour	4 hours	7 Calendar days
Hanging mast arm, head or open luminaire	1 hour to clear	N/A	7 Calendar days
Radio problem	1 hour	4 hours	7 Calendar days
Motorist caused damage or leaning light pole 10 degrees or more	1 hour to clear	4 hours	7 Calendar days
Circuit out – breaker	1 hour	4 hours	7 Calendar days
Circuit out – Cable trouble	1 hour	24 hours	21 Calendar days
Outage of 3 or more successive lights	1 hour	4 hours	N/A
Outage of 75% of lights on one tower	1 hour	4 hours	7 Calendar days
Outage of light nearest RR crossing approach, islands, or gores	1 hour	4 hours	N/A
Multiple Outages (found on night patrol survey or reported to EMC)	1 hour	4 hours	7 Calendar days
Navigation light outage, single	N/A	1 day	7 calendar days

- **Service Response Time** -- amount of time from the initial notification to the Contractor until a patrolman physically arrives at the location
- **Service Restoration Time** – amount of time from the initial notification to the Contractor until the time the system is fully operational again (In cases of motorist caused damage, the undamaged portions of the system are operational.)
- **Permanent Repair Time** – amount of time from initial notification to the Contractor until the time permanent repairs are made if the Contractor was required to make temporary repairs to meet the service restoration requirement

7.4 ROUTINE MAINTENANCE EQUIPMENT RESPONSIBILITIES

7.4.1 DECAL

The cabinet, light pole, underpass, sign, camera or light tower identification decal shall be replaced on the same day in which the decal is observed and/or reported to be missing or damaged from any cause whatsoever.

The accident reference (mile marker) decals affixed to light poles shall be replaced on the same day in which the decal is observed and/or reported to be missing or damaged from any cause whatsoever.

Light pole replacements due to motorist caused damage shall have all decals, including accident reference numbers, furnished and installed by the Contractor.

7.4.2 CONTROLLER

The lighting controller has several components that require special training to understand the operation and its maintenance. The Contractor must follow a procedure that implements those items covered with special training classes to enable the patrolman to troubleshoot systematically and identify the faulty component whenever there is a problem with the controller. After responding to a trouble call, the patrolman must record the problem found and action taken for service restoration on the cabinet log sheet in addition to ticket. When there is more than one service call due to the same component failure within a month, the Contractor shall replace that component with a new one instead of making temporary repairs.

SCADA Alarms

Receipt of three (3) alarms during one (1) month period, indicating the existence of a recurring problem, shall be investigated and promptly repaired to eliminate the reported alarms. The Contractor shall report his corrective action via email or "The Contractors Advisory Inspection Log Sheet" as per Article 4.0.

Cabinet Components

Receipt of three (3) or more independent lighting tickets where the problem is caused by the same component(s) during any two (2) month period indicating the existence of a recurring problem will be considered unsatisfactory service.

Clock setting

Repeated controller malfunctions due to an incorrect time of the day setting on the controllers' time clock which results in not energizing lighting at sunset and not de-energizing the lighting installation at sunrise shall be considered unsatisfactory service.

Cabinet

The Contractor shall repair lighting cabinet doors, hinges, meter box, etc., to keep the cabinet functioning effectively.

Log Sheets

All inspections shall be logged and recorded with the action taken. The Contractor shall maintain service log sheets in each lighting cabinet. New log sheets shall be placed in the cabinet (in protective plastic) in January 2011. The removed (completed) log sheets shall be submitted to the Engineer in the January 2011 the monthly routine maintenance work documentation book.

Foundation

Minor repairs to concrete foundations shall be completed within seven (7) calendar days from the date of discovery and issuance of a ticket, or within twenty one (21) days if the rebuilding or complete replacement of a concrete foundation is required.

Pad and Bumper Post

If the cabinet pad and/or bumper post are found to be missing, damaged or have shifted due to the ground condition, then Contractor shall repair or replace to the original condition.

Warning Sign

If the cabinet “voltage warning” decal/sign (as approved by the Engineer) is found to be missing or damaged, the Contractor shall immediately apply a replacement.

Radio

When the Contractor removes a lighting cabinet radio for repair, it must immediately be replaced with a spare radio from the Contractor’s spare parts inventory. The Contractor is required to have two (2) working, SCADA radios available in his spare parts inventory at all times. The Contractor shall repair the defective radio within seven (7) calendar days, or shall replace with a new radio similar in kind or current version. The ticket shall document this exchange/repair.

Utility Service Voltage

The Contractor shall dispatch a patrolman to check if there has been a notification of low voltage and/or utility problems within one (1) hour of notification. If the service voltage is not restored before sunset, then the Contractor shall provide a generator to power the lights.

Vegetation

The Contractor shall clear all vegetation within the 10-ft. areas surrounding the controller.

7.4.3 LIGHT POLE UNIT

Pole

Standard (non-davit) round-tapered, conventional or davit light poles decorative or painted of different manufacture than the originally installed pole may be used, but shall otherwise be in conformance with approved submittal requirements. Standard or davit light pole mast arms shall be replaced with the same color, length, rise, diameter, and shape as the original installation. All resets of light poles from knockdowns shall use a short transformer base (T-base). The Contractor shall not use a breakaway coupling. The replacement pole shall meet UL standard.

Ground Lug

If the existing ground tap/lug is damaged or not functional, then the pole should be drilled and the ground wire lugged on and not wrapped.

Light Pole Foundation

It is the Contractor’s responsibility to be knowledgeable of safety requirements for light pole foundation construction and current approved height limitations for base extensions above the adjacent grade. See lighting Figures L-5a (concrete) and L-6 (metal) for foundation details distributed at the Pre-bid Meeting.

Minor repairs to concrete foundations shall be completed within seven (7) calendar days from the date of discovery and issuance of a ticket, or within twenty-one (21) days if the rebuilding or complete replacement of a concrete foundation is required.

Uniduct Exposure

Uniduct must be visible inside the pole. Below the foundation grade or flush is not acceptable. Where uniduct is below grade or flush, a split 12” uniduct extension shall be installed in place (excluding existing direct buried cable).

Mast Arm

The Contractor shall use the same mast arm of the type, color, length, direction and rise, replaced after a knockdown by a motorist, or fall down due to high wind or age. The davit arm shall be horizontal to the X-axis and 90 degrees to the shaft plus/minus a tolerance allowed by the manufacturer.

Anti-Theft Locking Devices

Selected locations of the Eisenhower (I-290) Expressway have a special anti-theft locking device on handhole covers and junction boxes at power centers to prevent cable theft. It is the Contractor's responsibility to monitor the special coded, keyed nut drivers required for these junction boxes. If a coded key is lost, it shall be the Contractor's responsibility to furnish and replace a new coded fastener nut at all locations with these anti-theft locking devices, and replace the coded, keyed nut drivers, all at the Contractor's expense.

7.4.4 LIGHT TOWER

Light Towers Requiring Special Maintenance

Additional personnel and equipment may be required to perform routine maintenance (outages and safety inspections) on light towers located on I-290 (Eisenhower Expressway) near Wolf Road, I 80/90 Kingery Expressway and I 394. A lane closure is required, as are attenuators and a bucket truck due to the barrier wall adjacent to the foundation.

Tower Knockdown and Reset

Within ten (10) calendar days from notification of a tower knockdown, the Contractor shall install temporary lighting (under routine maintenance) to restore lighting service and shall provide catalog material cuts for the tower replacement to the Engineer for approval. Following the approval of the catalog cuts, and receipt of a non-routine authorization, the Contractor shall order the material and complete the reinstallation of the light tower within a three (3) month period. The Contractor shall be paid for permanent restoration/repairs to light towers damaged by motorist through applicable non-routine pay items.

Block Retaining Wall and Pad

If a light tower block retaining wall and adjacent concrete pad are found to be damaged, they shall be promptly repaired.

Ground Well

The ground well shall be inspected including the cad weld and repaired as necessary.

Site Maintenance

The Contractor shall clear all vegetation within the 10 ft area surrounding a light tower.

External Portable Drive

The Contractor shall maintain, in proper working order, all external portable drive units in State Stock, which are used to lower the towers which are without an internal drive.

7.4.5 LUMINAIRES

Replacement

Certain requirements apply when lighting units are replaced or repaired in place under routine maintenance. Unless otherwise authorized by the Engineer, luminaire ballasts shall match the system voltage and be of the same type and characteristic as the original design and installation being replaced. In addition, except as otherwise indicated or authorized by the Engineer, the luminaires installed as replacements at an installation location, installed within six (6) years of the current year, shall be of the same manufacturer, and have the same photometric performance specification as the originally installed luminaire.

When a replacement luminaire is installed, it shall be equipped with a new lamp. Ballasts in luminaires, employed on other than the District's standard voltage of 240 volts single phase, may be of a multi-tap type, as approved by the Engineer. Luminaires replacing drop-lens (reflector-type) may be replaced with flat-glass cut-off type units of a distribution type and photometric performance approved by the Engineer. The Contractor shall submit proposed variant replacements to the Engineer for approval.

Outages

The HPS replacement lamp shall be rated for minimum of 40,000 hrs, Sylvania ET 18-67312 non-cycling or better, as approved by the Engineer. The Contractor shall wash all the luminaires on the tower, pole, underpass, navigation, tube lighting or sign lighting during an outage repair.

The non-routine group re-lamping program will not be authorized in this contract. Refer to Article 4.10.2 to review outage repair requirements and documentation. The Contractor shall provide the labor, equipment and material to meet the response requirements for all outages and repairs this work shall be included as part of routine maintenance.

Shields (Light Towers or Light Pole Luminaires)

The luminaire shield, if found to be torn or ineffective, or missing, or at the time of a knockdown repair, shall be replaced with the same kind or better.

Luminaire Keeper

The luminaire keeper, if found to be torn or ineffective, or missing, or at the time of a knockdown repair, shall be repaired or replaced with the same kind or better.

7.4.6 CABLE

Repair or Replacement

The Contractor shall repair or replace all cable and associated equipment grounding cable or integral cable-in-duct combination, which becomes damaged, displaced, defective or missing from any cause whatsoever. If an aerial cable is used for temporary response, it shall be installed so that its lowest point is at least twenty-five (25) feet above ground level. When cable deficiencies become suspected or known, the Contractor shall take immediate corrective action to make temporary repairs. Permanent repairs shall follow as soon as possible and shall be completed within 21 calendar days. Only for notifications of cable failure after December 1, when frozen ground conditions restrict permanent repair work, will the temporary repairs be acceptable for a longer period of time. When temporary cable is installed, all splices shall be as good as splices for permanent repairs and proper grounding shall be observed. In all cases where temporary repairs were made during the winter months, permanent repairs shall be completed by May 30.

The Contractor shall document on tickets all cases where temporary aerial cable was installed or found, failure to respond such instances shall be grounds for assessment of liquidated damages. Temporary ground laid cable or attachment to the metal structures is not allowed. Except as otherwise authorized by the Engineer, cable used to repair or replace faulty cable runs under routine maintenance shall be new, and shall be copper conductor EPR-insulated cable. The new cable run shall include a separate green ground wire sized in accordance with codes, even if it did not exist before the malfunction.

Cable in Duct or Conduit

Where damaged cable is in duct or conduit, the faulty wiring shall be removed and replaced with the approved new cable and the duct or conduit shall be repaired. The rigid galvanized conduit shall be used under roadways and driveways to push the uniduct unless otherwise approved by the Engineer.

Cable Run/Grounding Conductor

The new cable run shall include a green equipment ground conductor sized in accordance with the electrical codes. All cable used shall be new copper conductor, EPR-insulated as specified. If the uniduct cannot accommodate the green insulated ground wire, then the bare ground wire continuity shall be tested/measured. All pertinent information shall be documented and communicated to the Engineer by email. If the existing installation is without an equipment ground wire, the Contractor shall also note this information in email to the Engineer.

Ground Well/Rod

The ground well/rod for lighting cabinet, HMLT (high mast lighting tower) and pole shall be inspected for exothermic weld and continuity, if defective shall be repaired or replaced.

Cable Repair (Direct Buried)

The Contractor shall remove and replace any section of faulty direct buried cable plus a minimum of three (3) feet on each side including all of the undamaged adjacent cables. If the fault is six (6) feet or less from a pole, splicing handhole, or a control cabinet, the six (6) foot section shall be removed and replaced. The Engineer shall approve the cable to be used and the type of splices. Existing underground wires may be spliced. If no equipment ground wire exists, the Contractor shall notify the Engineer by email prior to replacing the complete span. At the Engineers direction the Contractor shall install a green ground conductor that shall be paid under non-routine work. Estimated costs shall be submitted by e-mail to the Engineer prior to the start of work.

7.4.7 SIGN

When a sign structure is being repaired or replaced, the Contractor shall disconnect and/or reconnect the sign structure as requested by Department personnel. Prior to a maintenance transfer, the Contractor shall inspect the sign installation with the Engineer and/or IDOT inspector. The Contractor shall replace disconnect switch if it is rusted and/or inoperable to isolate sign lighting fixtures.

7.5 LIGHTING SCADA SYSTEM

The lighting SCADA system enables the remote control of the lighting at the cabinets equipped with radios along the expressway system on certain arterial highways within District 1. The lighting at such locations is automatically turned on after sun set and turned off before sunrise by the photocell control at the D-1 ComCenter.

Manual remote control features are also available at the IDOT ComCenter, the Traffic Operations Field Office, and the EMC Dispatch Center. The Contractor shall assume responsibility for all manually-initiated commands of the system, such as that required for day time inspection of selected lighting system installations. (In no case, shall the Contractor substitute this partial control of the system for the required lock-out/tag-out procedures necessary for safe work practices.) The Contractor shall note, however, that unless there are specific arrangements with the Engineer to the contrary, all normal automatic features shall remain operational at all times.

The Department retains the right to suspend or terminate the Contractor's privilege to use the system for misuse of the system or any other reason. Only trained/qualified Contractor personnel shall be allowed to operate the lighting SCADA system. Also refer to Article 6.0 Advanced Systems.

7.6 MONTHLY DAYTIME TUNNEL LIGHTING INSPECTIONS

The Lighting System Manager or other personnel, as approved by the Engineer, shall under routine maintenance, schedule an inspection during the first half of the month, to review the operational condition of daytime tunnel lighting equipment to assure that systems are performing at the level of service for which they are designed. The equipment required for both day and night circuit operation shall be inspected.

The Contractor shall record all lighting outages and other deficiencies, on the tunnel outage log L-1, and date of repairs when complete. Outage repairs for all tunnels are to be completed within seven (7) calendar days of the monthly daytime inspection. The tunnel outage logs are to be emailed to the Engineer, when repairs are complete and the summary report submitted in the monthly routine work submittal book. In addition, the lighting system manager shall notify the Engineer or appointed IDOT Inspector, when repair work is complete, so a joint inspection may be conducted, on a mutually agreed date, during the last work week of the month.

Locations for tunnel inspections:

Loc. # L0115	Stewart's Cave Tunnel
Loc. # L0137	I-55 Tunnel @ Pulaski Road
Loc. # L0873	Erie Street Tunnel
Loc. # L0883	Hubbard's Cave Tunnel
Loc. # L1325	I-290 @ Canal St. (under Post Office)
Loc. # L1740	Lower Wacker Drive @ Randolph
Loc. # L1745	Lower Wacker Drive @ Madison
Loc. # L1753	Lower Wacker Drive @ Adams
Loc. # L1755	Lower Wacker Drive @ Van Buren
Loc. # L1713	US 34 (Ogden Ave) @ 26 th St.,

7.7 PREVENTIVE MAINTENANCE PROGRAMS

The Contractor shall list inspections and repairs performed in the daily agenda for the below listed routine maintenance programs. All submittals shall be made in the monthly routine work submittal book. No allowances will be made for delays due to poor weather or personnel shortages.

Art. No.	Form #	Program	No. of Locations	Frequency	Submittal
7.7.1	L-2	Clock/Radio/Cabinet Inspection	All	Approx. 50/month	RWSB
7.7.2	L-2	SCADA Back-up Battery Replacement		Year 2011 only	RWSB
7.7.3	L-3	Control Cabinet Full Inspection	½ All Loc.	Approx. 20/month	RWSB
7.7.4	L-4	Pole & Underpass Inspection Report	All	Per Schedule	RWSB
7.7.5	L-5	Light Tower Safety Inspection	All	Approx. 50/month	RWSB
7.7.6		Tower Structural & Analysis Report	40	Yearly	RWSB
7.7.7		Photo Cell Calibration		Yearly/June 21 st	RWSB
7.7.8		Navigation Lighting Inspection	All	Yearly	Email
7.7.9		Lighting Controller Replacement	6	Yearly	RWSB

7.7.1 YEARLY CLOCK, RADIO, AND CABINET INSPECTION

The Contractor shall conduct a yearly clock, radio and cabinet inspection at every lighting system location, once per year. An inspection schedule shall be followed, as presented by the Engineer. Approximately fifty (50) cabinets are to be inspected monthly. This schedule will be available at the Pre-Construction meeting.

The Contractor shall replace the back-up battery for clocks (chargeable or regular), record the battery model and number installed on inspection log L-2. The Contractor is also required to put a sticker on the clock indicating the date for new battery, record the location number, name and battery model and serial number installed information to a spreadsheet, and submit monthly in the routine maintenance work submittal book.

The Contractor shall clean the cabinet, install decals or replace if necessary, and check the following (refer to log L-2):

- Time clock, including escapement (reserve power) and back up battery
- Check radio code by turning On/Off
- Background timer
- Springs (reset as required)
- Lighting contactors and surge suppressor
- Tighten all the contacts with proper torque
- Radio harness, connectors, cables
- Clean inside with vacuum cleaner
- Antenna
- Outages

Repairs must be completed in the same month as the inspection. L-2 logs with repair work notations and ticket numbers shall be submitted to the Engineer in the monthly routine work submittal book. Tickets shall be created for any problems found.

Contractor shall schedule these inspections with the IDOT Maintenance Technician present. The Contractor shall operate the lights and conduct a full inspection of the above. Any Items found damaged, malfunctions, or outages shall be entered into an EMCMS ticket to schedule repair work.

The log form for this survey will be available at the Pre-Construction meeting. Logs shall be submitted in the monthly routine work submittal book.

7.7.2 FIRST YEAR SCADA BACKUP BATTERY REPLACEMENT FOR RADIO

The Contractor shall replace the SCADA backup battery for the radio at all lighting locations in 2011, during the clock, radio and exterior cabinet inspection program. The location number, name, and the battery model installed shall be recorded on inspection log L-2.

7.7.3 YEARLY CONTROL CABINET FULL INSPECTION

(One Half of all Lighting Locations per Year)

The Contractor shall conduct control cabinet inventory inspections on one half of all lighting locations once per year. Information to be collected on log L-3 includes, but is not limited to, CE meter number, CE supply voltage, transformer size, location and transformer number, conduit and cable types, and clock manufacturer and model number.

The Contractor shall carry a digital camera to record the control cabinet pictures, one to show inside of the cabinet and other to view outside of cabinet, for each location. All the pictures shall be transferred into a file on disc to submit with monthly submittal book.

Objectionable current flow from one ground connection to another, which occurs from multiple grounds on the same system equipment or highly unbalanced loads shall be identified and logged. Also the ground resistance and the continuity test for all the circuits shall be measured

and documented on the log L-3 as part of the inspection. Before making test measurements, the Contractor shall verify that all luminaires are operating.

As part of this inspection the following SCADA system items shall also be completed:

1. All SCADA inputs/outputs shall be checked for proper operation. This shall be verified by visual inspection of the SCADA CPU.
2. SCADA radio system communications shall be checked to and from the cabinet.
3. Confirm the calibration of analog input values. (This is done by measuring the current and voltage inputs and having the EMC Dispatch Center interrogate the power center.) The interrogated values shall be equivalent to measured values. If the voltage is different by +/- 3 volts or if the amperage is different by +/- 2 amps, a Ticket shall be generated.

The Contractor shall follow an inspection schedule as presented by the Engineer. Approximately twenty (20) cabinets are to be inspected monthly. This schedule will be available at the Pre-Construction meeting. Repairs must be completed in the same month as the inspection. L-3 logs with repair work notations and ticket numbers shall be submitted to the Engineer in the monthly routine work submittal book.

7.7.4 YEARLY LIGHT POLE AND UNDERPASS SAFETY INSPECTION

The Contractor shall conduct a safety inspection of all lighting locations once per year. The purpose of this inspection is to insure that all lighting unit components are maintained in a safe and effective operating condition as originally designed or as subsequently modified by the Department. A minimum of fifty (50) lighting system locations per month must be inspected beginning in February, and continuing in subsequent months, with the remainder of the locations due in November of each calendar year.

Repairs must be completed in the same month as the inspection. L-4 logs with repair work notations and ticket numbers shall be submitted to the Engineer in the monthly routine work documentation book.

Required repair work includes replacement of damaged poles, T-base, mast arms, luminaires, shields, luminaire keeper, leaning poles, hardware, underpass fixtures, junction boxes, conduit, conduit hangers, or missing appurtenances such as decals, decal mounting brackets, mile markers, shrouds, skirts, leaves, and handhole doors. All equipment and materials required for repairs and replacements shall be furnished as part of routine maintenance.

The Contractor shall identify:

- existing light pole bases which are too high and do not conform with the current approved height limitations for base extensions above the adjacent grade
- loose and/or worn nuts and washers by lifting the shroud or removing the skirt
- any other abnormality (cracks, loose nuts and joints) due to the wind load condition
- leaning (more than 10 degrees) poles
- Davit poles with open mast arm (not parallel to ground)
- pole that is susceptible to hit by motorist due to road condition
- mast arms fastened with riv-nuts
- lighting locations with temporary aerial cable

The Contractor may be entitled to material only re-imbusement per Article 4.0, Contractor Advisory Inspections.

The Contractor shall conduct any safety inspection of light poles or underpass fixtures when recommended by the manufacturer, upon request by the Engineer, which is in addition to the regular inspection as specified herein.

7.7.5 YEARLY LIGHT TOWER SAFETY INSPECTION

The Contractor shall conduct a safety inspection of all light towers once per year. The purpose of this inspection is to insure that all tower components are maintained in a safe and effective operating condition as originally designed or as subsequently modified by the Department. The inspections shall be completed by the end of November of each year. The towers shall be inspected a year apart in the same month in year 2011 and 2012 (if the Contract is renewed).

The Contractor shall examine for deterioration:

- Paint
- Metal parts (for corrosion and/or rust)
- Foundation
- Mounting bolts
- Shaft
- Handhole doors
- Lowering device including motor and cables
- Ring assembly electrical cable (faulty splices)
- Fuse kits
- Decals and decal mounting brackets
- ESCO stainless steel swage sockets for cracks
- Outages

Contractor shall schedule these inspections with an IDOT Maintenance Technician present. The Contractor shall operate the lights and conduct a full inspection of the above. Any items found damaged, malfunctions, or outages shall be entered into an EMCMS ticket to schedule repair work.

The Contractor shall identify the number of towers, and lamps per tower at each location.

The Contractor shall inspect rust on outside of the shaft and at all slip joints during the tower inspection program. The location and magnitude of the rust spots shall be described in detail on the inspection report. At the time of the tower inspection program any rust spots, found within 20 feet from ground, shall be cleaned and touched up, cracks as found located in the first ten (10) feet shall be clearly identified and documented with pictures and measurements and sent to the Engineer, all bolts shall be tightened as necessary, this work shall be done and paid for under routine maintenance.

If the Engineer determines the need to paint the tower or any part thereof, the Contractor shall be paid through Non-Routine maintenance pay items.

The Contractor shall also provide access and traffic control as necessary under routine maintenance.

All the deficiencies found during this inspection shall be listed on the inspection form and repairs must be completed within 30 days of the inspection. L-5 logs with repair work notations shall be submitted to the Engineer in the monthly routine work submittal book.

The Contractor shall conduct any safety inspection of light towers recommended by the manufacturer, upon request by the Engineer, which is in addition to the regular inspection as specified herein.

CCTV

The Contractor shall list separately all the towers with CCTV during the Tower Inspection Program. If there are any damages to the camera and/or cable, the Contractor shall create an EMCMS ticket for repair.

7.7.6 YEARLY STRUCTURAL ENGINEER LIGHT TOWER FULL INSPECTION AND ANALYSIS

The Contractor shall provide a qualified Structural Engineer Consulting subcontractor, as approved by the Engineer, to conduct a full inspection with testing and analysis reports of forty (40) light towers and foundations. All structural analysis reports must be performed by a licensed Structural Engineer and shall be stamped with his/her license, and shall be received by the Engineer within 30 days from the date of inspection. Testing shall include non-destructive testing; ultrasonic testing of anchor bolts, and tower base wall thickness testing, base welds, foundation and installation shall be inspected tested and analyzed for structural integrity as approved by the Engineer.

The Contractor shall clean and prepare the surface of the tower for inspection; once testing has been performed the contractor shall touch up the cleaned surface with primer and then paint. Provide access and traffic control as necessary when required. The Engineer shall provide the tower locations at the Pre-Construction meeting. This work shall be paid for under routine maintenance.

The Structural Engineering subcontractor shall provide a summary report to the Engineer with photos of the tower and any problems areas and shall identify critical towers that are in need of repair or replacement, and which or when tower should be monitored and/or re-inspected, along with Structural Engineer's recommendations.

7.7.7 YEARLY PHOTO-CELL CALIBRATION

Each year, on the day of the summer solstice, normally June 21st, the Contractor shall test and adjust the Hubbard's Cave and Stewart's Cave tunnel consoles per manufacturer's operation manual. The Engineer shall attend this inspection and provide the luminance level specifications for Stewart's Cave (L0115) Tunnel and Hubbard's Cave (L0883). Also on this day, the Contractor shall check and clean the IDOT HQ photo cell and adjust to 5 +/- 0.5 ft. cd., or as specified by the Engineer for proper lighting SCADA control operations.

7.7.8 YEARLY NAVIGATION LIGHTING INSPECTION

L.E.D. lamps shall be tested with an optical meter each year to determine the need for replacement. Readings from the optical meter shall be compared to manufacturer's minimum requirements and those lamps not meeting minimum performance values shall be replaced. Replacement of L.E.D. lamps when determined to be necessary shall be paid as routine work or covered by manufacturer warranty. The Contractor shall record all deficient items and their replacement and submit the information after completion to the Lighting Maintenance Engineer by email. The information shall include manufacturer, model, and serial number of each L.E.D. module needing replacement. Repair of L.E.D. single outages and damaged equipment will be routine maintenance.

7.7.9 YEARLY LIGHTING CONTROLLER REPLACEMENT

As part of Routine Maintenance of the Lighting System, the Electrical Maintenance Contractor shall upgrade service including the service conductors and conduit, remove and replace lighting controller, modify foundation as required, and replace bumper post if missing or damaged at six (6) lighting locations yearly. The Contractor shall complete the work within the calendar year.

The six (6) locations to be modified in the first year of contract are:

Location	Expressway	Cross Street	Cabinet	Approx. Length of Service cable from ComEd Pole
L0450	I 57	@ Kedzie Ave	PC: K	300 ft.
L0492	I 57	@ Vollmer Rd.	PC: W	75 ft.
L0497	I 57	@ Sauk Trail	PC: Y	112 ft.
L1030	I 94	@ Michigan Ave.	PC: G	90 ft.
L1250	I 94	@ Lake Ave.	PC: L	75 ft.
L1590	I 290	@ Lake Cook Rd.	PC: Z	100 ft.

If the Contract is renewed for a second year, the six (6) locations to be modified are:

Location	Expressway	Cross Street	Cabinet	Approx. Length of Service cable from ComEd Pole
L1470	I 290	@ Army Trail Rd.	PC: T	100 ft.
L1410	I 290	@ North Ave.	PC: X	110 ft.
L1425	I 290	@ Villa Ave.	PC: B	100 ft.
L1430	I 290	@ IL 83 Old Grand Ave.	PC: C	100 ft.
L1345	I 290	@ Pulaski Ave.	PC: J	176 ft.
L1350	I 290	@ IL 50 Cicero Ave.,	PC: K	180 ft.

A copy of the record drawing for the lighting cabinet indicating the location of cabinet, service conduit size, and number of cables with size from ComEd pole or pad mount transformer shall be provided at the pre-bid meeting.

If one of the above list control cabinets is replaced for any cause whatsoever, then it is the Engineer's option to designate an alternate location to keep the same number of locations per contract year.

The Contractor is responsible for scheduling the work and for coordinating with the Engineer whenever Engineer presence is required. The Contractor shall also advise the Engineer when each location is complete and shall provide a written documentation via e-mail or fax to that effect. The Engineer reserves the right to require a final inspection of the changeover at any or all of the locations documented as complete. A corrective work list shall be prepared for deficiencies found during inspection. If progress of the work is inadequate, or if errors in complete work are repeatedly found, the Engineer may initiate withholding of Routine Maintenance payment. The Contractor shall provide a progress report in the monthly routine work submittal book.

The Contractor shall be responsible for all traffic control and temporary provisions required for the work, all at no additional cost to the contract. All materials and work shall be in conformance with the requirements of applicable contract specifications and Article 250 of the National Electrical Code.

The Contractor shall be responsible for coordination with the Electric Utility as necessary and shall be responsible for any and all modifications. The Contractor shall provide temporary backup power or service to maintain continued operation of the cabinet during transition.

The work shall include:

- New conduit and cable from the service disconnect to the controller
- Restoration of ground with seed or sod
- New grounding of the service unless the existing grounding is adequate as witnessed by the Engineer
- Removing of the old cabinet and transferring into State Stock
- Replacing with new SCADA type cabinet with the same radio code
- Coordinating the RTU terminal and FIU configuration GUI modification
- Testing and documentation

Foundation

The foundation, if modified or replaced, shall be paid using non-routine pay items.

Replace Electric Service Conductors

The work shall include the removal of the existing service conductors and shall include the furnishing and installing of new service conductors, based on the manner of the existing service.

Provide New System Ground of Electric Service

The work shall include the installation of a new system ground, using one or more grounding electrodes, or other means approved by the Engineer. The system ground shall have a resistance to earth not to exceed 10 ohms. The Contractor shall conduct a system ground resistance test, using the fall-off potential method, and it shall be witnessed and approved by the Engineer. Ground resistance readings shall be submitted on progress reports. Should more than one electrode be required, additional electrodes shall be connected to the grid, and the grid re-tested. All ground electrode connections shall be exothermically welded. Ground rods and grounding electrode conductors shall be as specified and detailed.

Lighting Cabinet

The Contractor shall furnish and install a roadway lighting controller, duplex console type with radio control and associated wiring for control of highway lighting controller, as specified herein.

Materials

Materials shall be according to Article 1068 of the Standard Specification for Road and Bridge Construction, current version, except as follows: First three paragraphs of Article 1068.01 (c) (2) to be eliminated.

Surface Preparation: The cabinet, doors and all other parts to be painted shall be submerged in each tank of a 3-step iron phosphate conversion technique. After phosphatizing the parts shall be passed through an oven and baked to eliminate any moisture.

Finish coat: Shall be polyester powder paint applied electrostatically to a minimum thickness of 2 mils and baked at 375 degrees for 20 minutes.

Revise the first sentence of Article 1068.01 (e) (4) of the Standard Specifications to read:

“Contactors shall be electrically operated, mechanically held as specified, with the number of poles required for the service and with operating coil voltage as indicated.”

Add the following to Article 825 of the Standard Specifications:

Radio Control Equipment – Receiver-Decoder

The radio control module consists of a radio receiver, digital decoder, and an output interface which allows centralized remote radio control of the lighting controller turn-on and turn-off functions. The radio control module must be capable of operation consistent with the existing radio control system, a Motorola SCADA Central Station.

The existing control system currently operates over 250 discrete lighting controllers via a securely coded proprietary data scheme. For this reason, the control module must consist of a Motorola ACE 3600 Modular Remote Unit, model F 7563, (small housing), with no less than the following options:

Motorola Designation	Description
F 7563 (VHF), F 7564 (UHF)	ACE 3600 CPU **
V 245	Mixed I/O
V 261	240 VAC Power Supply w/charger
Z 857AA	Surge Protection

** Includes (1) three slot frame, (1) ACE 3600 CPU plus firmware, (1) mixed I/O Module, (1) VHF or UHF* CDM 750 Radio with FSK Radio Interface, port 3 (1) AC Power Supply with Charger, (1) 6.5 Ah battery, installed in a 15" X 15" X 8.26" NEMA 4X/IP 56 painted metal enclosure with instruction manual.

* As directed by the Engineer

The manufacturer's designation by no means relieves the Contractor of providing a fully functional radio system as described herein.

The Radio Control Module shall be programmed for the following operational parameters:

- Transceiver Frequency: To be specified by the Engineer
- Receive Frequency: To be specified by the Engineer
- Communications Failure Preset: Normally Open
- Individual Station address: To be specified by the Engineer

Antenna

The antenna shall be thick mount up to ½" mounting surface mounted by screw adapter (no magnet mounts). The low profile antenna mount shall be equivalent to Antenex – MABT8XNSI antenna Mount Low Profile. Accompanying antenna shall be equivalent to Antenex – B132 (Broad Band – VHF/UHF ¼ wave 150-928 MHz. Accompanying cable shall be equivalent to Antenex-RG8X and conductor equivalent to Antenex – CN8X from Radio to Antenna and shall be of appropriate length and not longer than 8 ft.

Installation of I/O Module

All motherboard cards shall be configured and installed as per manufacturer's specifications and IDOT specification Lighting SCADA 397. Modules include but are not limited to; CPU, Mixed I/O. All digital inputs terminated on the Mixed I/O card shall be dry. Termination points for all digital input points will be reflected on power center wiring diagram or additional wiring schematic provided by the engineer. All digital outputs received from the Mixed I/O card shall be rated at 24 VAC 2A. All digital outputs shall be connected to interposing relays prior to being integrated into the power center wiring logic. The digital outputs shall maintain a momentary closure for approximately 2 seconds.

All wiring termination points shall be tagged using the nomenclature given on the wiring diagram. The alarms acknowledge button shall be implemented with a placard stating "Alarm Acknowledge". Site configuration, map implementation, screens tagging and other related software configurations shall be specified elsewhere herein.

The antenna shall be centered on the top of the control cabinet. The antenna cable shall be dressed and trimmed for minimal length, allowing sufficient slack of removal of the radio connection for replacement or testing without disruption to the installation. The antenna connector shall be

properly soldered to the cable assembly. Great care shall be exercised in the assembly of the antenna connector, excessive heat will destroy the inner insulation, and insufficient heat will produce a cold solder connection on the outer shield.

Intra-module wiring shall be 18 AWG stranded wire, color coded (American) consistent with battery polarity, and signal. The wire connection from terminal block (TB2) to the interpose relays shall be 14 AWG stranded. All wires connected to the radio modules shall be dressed and tinned prior to insertion, (crimp on connectors shall not be allowed for use in the radio system). Cost of all wire is inclusive within the scope of this work.

A terminal strip separate from the integral radio module and power supply shall be provided to interface power and signal conductors to the lighting controller. Terminals and wiring shall be labeled in accordance with the drawings, and dressed to allow service. The radio module shall be provided with constant 240 VAC power. The control power breaker shall provide power for the SCADA system. This is to allow the system to be energized at all times.

The SCADA system shall be tested in conjunction with the controller inspection, prior to field installation. The turn-on and turn-off function shall be tested ten (10) consecutive times utilizing actual signals originating from District 1 Headquarters. Any failures must be cleared before the controller is delivered to the job site.

Null covers shall be provided for the slots not used. All analog inputs shall be 4-20 mA. All I-O wiring including analog and digital shall be wired as per the enclosed table.

SCADA System Control Relay Assembly

The Contractor shall mount and wire four (4) relays in a box as shown in the wiring diagram. Two relays shall be 240 volts sealed type and two relays shall be 24 volts sealed type, unless otherwise indicated, shall have contacts rated at not less than 20 amperes at 240 volts. The power relay for activating the lighting contactors shall have contacts rated to handle the contactor inrush. The relays shall be wired to a marked terminal strip.

Testing

As part of final acceptance testing, all individual I/O points and internal status alarms shall be tested for proper operation and transmission. The transmission shall be confirmed at IDOT District 1 HQ and the Contractors dispatch facility. This full SCADA system start-up shall be completed with the Engineer present.

The SCADA radio system shall have the following items tested: VSWR, cable impedance, RSSI to the power center and confirmation that data sent from power center is received by the IDOT lighting system computers.

Analog Inputs and Transducers

The panel shall include one voltage transducer for monitoring the line voltage and one current transducer for monitoring the neutral current. Their outputs shall be 4-20 mA DC each and shall be wired to channels 1 and 2 of the Mixed I/O module as shown. The voltage transducer shall be Scientific Columbus Model # VT110 – PAN7 – A4-2 for 480/240 volt single phase systems. The current transducers shall be Mel Kirchner Technologies Model # AT2-420-24L-FT, with power supply, PS-240-24P-1A. Both analog inputs shall be wired using shielded cable. Both transducers shall also be calibrated so that the SCADA system reads the correct value.

Testing of the Assembled Cabinet

Prior to shipment of the completed control cabinet, the control cabinet shall be tested for load, short circuits and complete operation of the cabinet as specified herein and as shown on the plans. The test shall be made at the manufacturer's shop, by the manufacturer and shall be witnessed by the Engineer. The Contractor shall arrange the test date with the Engineer and so allow not less than seven (7) days advance notice. The cabinet shall not be delivered to the job site until inspected, tested and approved for delivery by the Engineer.

Construction Requirements

General

The lighting controller shall be delivered to the storage facility located within District 1. Wood blocking or other supports and appurtenant items required for proper storage shall be included in this item.

Staging

Manufacturer recommendation is for all Central Configuration programming be completed prior to the initial check out/PM of the SCADA unit in the field. This is to assure/confirm 2 way radio communications from the field RTU the Central. Lighting controller information submitted for approval shall include any recommendations of the Manufacturer for storage as provided under this contract.

The packaging of the lighting controller shall incorporate the provisions recommended by the Manufacturer to accommodate storage.

TERM	MOSCAD DESTINATION	WIRE #	DESCRIPTION OF INPUT
32	Analog Input 1 (+)	TB2 B11	CABINET NEUTRAL CURRENT
33	Analog Input 1 (-)	TB2 B1	CABINET NEUTRAL CURRENT
34	Analog Input 2 (+)	TB2 A2	CABINET SERVICE VOLTAGE
35	Analog Input 2 (-)	TB2 B2	CABINET SERVICE VOLTAGE
40	P. Ground	TB2 A3	GROUND
1	Digital Input 1	TB2 B3	ALARM ACKNOWLEDGE
2	Digital Input 2	TB2 A4	DOOR OPEN
3	Digital input 3	TB2 A5	MAIN(S) BREAKER OPEN
4	Digital input 4	TB2 A7	CONTACTOR 1 OPEN
5	Digital Input 5	TB2 A8	CONTACTOR 2 OPEN
6	Digital input 6	TB2 A9	CABINET IN NON-AUTO
7	Digital input 7	TB2 A10	BACK-UP CLOCK OFF CALL
8	Digital Input 8	TB2 A11	BACK-UP CLOCK ON CALL
18	DI Common	*	COMMON
20	K1 NO	TB2 A12	LIGHTS ON CALL
21	K1 Com	TB2 B17	K1 COMMON
23	K2 NO	TB2 A13	LIGHTS OFF CALL
24	K2 Com	TB2 B17	K2 COMMON
17	24 V+	TB2 B13	24+ VDC

All analog inputs will be 4-20 mA only. Digital output relays will be electrically energized and momentarily held.

Mixed I/O module model number V 245

Lighting SCADA RTU Terminal Configuration

Description

This work shall consist of having the SCADA system manufacturer design, implement and test a new RTU on the Lighting SCADA System on all system terminals.

Materials

All software work shall be completed by the manufacturer or approved factory licensed sales and service company for the SCADA equipment. All licensing shall be provided by the entity completing the work. Licenses are to be held by IDOT.

Work

SCADA RTU Configuration and Programming:

1. Setup of CPU and accompanying modules
2. Setup of RTU site number, octal address, group call and All Call
3. Configure application alarm parameters (download config./application)
4. Development and implementation of control and alarm application from IDOT submitted telemetry requirements

Note: IDOT shall supply checklist listing I/O, telemetry, all call, group call and individual call data.

SCADA Service/Client Wonderware Programming:

1. Add RTU to Wonderware
2. Configure Wonderware to poll SCADA CPU for data on that specific RTU
3. Setup servers and clients for alarm notification and database I/O, for that specific RTU
4. Configure RTU polling
5. Activate RTU on FIU polling

SCADA FIU CPU Programming:

1. If RTU exists as an Intrac site, it will have to be setup as a MOSCAD site (MOSCAD CPU).
2. If RTU is a new site, it will have to be configured as a MOSCAD site (MOSCAD CPU).

Submittals

The Motorola VAR shall submit ladder programming, quiescent telemetry and SCADA configuration files for approval by the IDOT Engineer. Submittal shall be reviewed by the Engineer and returned noting changes and/or comments.

Testing and Documentation

As part of final acceptance testing, all individual I/O points and internal status (COS) alarms shall be tested for proper operation and transmission. The transmission shall be confirmed at IDOT Dist. HQ and the contractors dispatch facility. This full SCADA system start-up shall be completed with the Engineer present.

The control cabinet shall be tested for complete operation and the electrical load on each circuit shall be measured and documented on the Log form L-3. The ground resistance test shall be performed by the Contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the Contractor and witnessed by the Engineer.

Acceptance Transition

After the appropriate testing has been completed and approved by the Engineer, the new SCADA equipment shall be monitored for up to 2 weeks for proper operation. If any problems are to arise, all configuration changes shall be completed at no extra cost.

7.8 NON-ROUTINE MAINTENANCE

Review Section 2 Special Provisions.

7.9 LOGS AND FORMS

A sample of logs and forms as required for this Contract will be available at the Pre-Bid Meeting.

ARTICLE 8.0 – PUMP STATION SYSTEM

8.1 PUMP STATION SYSTEM DESCRIPTION

There are 48 State-owned pumping stations in District 1, used for pumping water collected from expressways and viaducts into sewers and area waterways. It is essential that these pump stations shall be available and ready to operate at their designed capacity at all times to keep the traffic moving and to ensure motorist safety. The type of equipment used varies from station to station. The equipment at the stations include several types of: electric motor driven pumps; multiple sources of utility power; emergency generators; electrical switchgear; motor control centers; transformers; transfer switches; control systems; electrical and flow instrumentation; alarm systems; gas detection systems; lighting systems; power wiring; SCADA RTUs; central, satellite and remote engineering processors of the PS SCADA system; SCADA repeater; radio transceivers, including antenna cables, antennas and antenna towers/poles; fuel and fuel tanks; purged air water level indicating systems; compressed air systems; lubrication systems; automatic trash racks and bar screens; water systems; heating and ventilation systems; steel fencing and gates, wrought iron fencing and gates, windows, doors, locks, highway advisory radio in certain stations, and all associated equipment, including building and structures and appurtenances owned by the State of Illinois and under the jurisdiction of the Department.

8.2 GENERAL MAINTENANCE RESPONSIBILITIES

All items listed in the System Description herein shall be maintained under routine maintenance. The Contractor shall maintain the building structure, grounds, utilities, and equipment such that it can be effectively used for its intended purpose. Equipment found during any inspection (routine and non-routine) which needs repair or replacement is covered under routine maintenance, unless otherwise stated herein. Unless specifically noted, all work required herein this Article shall be paid through routine maintenance. Also refer to response and maintenance requirements as listed in Article 4.0.

The Contractor shall provide the man power for installation, removal and operation of de-watering pumps and safety equipment to assure safe access to the wet pit for IDOT operations to clean wet pits. This work shall be included and paid for under routine maintenance.

At the beginning of the Contract, the Contractor shall, under routine maintenance:

- Organize log books in each pump station as described herein,
- Replace approximately 200 locks at pump stations (refer to Article 3.3.5)

8.3 SITE MAINTENANCE

The Contractor shall provide general site maintenance at pump stations, including, grass cutting, weed control, debris disposal, snow plowing and removal operations as required to provide safe access to facilities, and to maintain the sites in an aesthetically acceptable condition to the public.

Grass cutting, weed control, and debris disposal work shall be performed in the station areas, in the IDOT R.O.W., to a radius of fifty (50) feet surrounding the building, and within five (5) feet of the access driveway on each side. In addition tree trimming shall be performed within three (5) feet of all pump station structures. This maintenance shall be performed a minimum of once per month in the months, April through September.

Snow removal operations shall be conducted as necessary to provide safe and reasonable access to each facility. All pump stations, that require access for patrol, construction or other scheduled EMC work, shall be attended to immediately following a snowfall of more than three (3) inches. The Contractor shall notify the Engineer of his snow removal plan after each significant snowfall.

The Contractor shall submit a spreadsheet, noting the station and date above-mentioned work was completed, in the monthly routine work submittal book.

For snowfalls of less than 3 inches:

The Contractor shall provide reasonable access to each pump station via sidewalk, staircase, walkway, driveway, and parking areas by shoveling and salting within 48 hours.

For snowfall of more than 3 inches:

The Contractor shall provide snow plowing and salting of each station sidewalk, staircases, walkway, driveway, and parking areas, to commence within 24 hours, and shall be complete within 72 hours in the following order of priority:

Group #1: PS # 4, 7, 17, 28, 32, 37, 38, 40, 42 and 44.

Group #2: PS # 2, 3, 5, 9, 15, 20, 24-26, 30, 34, 46-48, 50 and 51.

Group #3: PS # 10 - 14, 16, 18, 19, 21-23, 27, 29, 33, 35, 36, 39, 41 and 43

8.4 RESPONSE MAINTENANCE FOR PS SYSTEM

8.4.1 CONTRACTOR PS CALL-OUT RESPONSE

Pump Stations shall remain in continuous operation during normal and emergency maintenance activities. It is imperative that the Contractor immediately address alarms, reports of water on pavement, reports of clogged inlets, hazmat spills, or other serious malfunctions or damage by dispatching trained personnel to check the pump station.

Although the availability/location of trained personnel dictates the call-out, during normal workday hours, the order of call-out response shall be:

1. SCADA Specialist
2. PS Specialist
3. PS Crew
4. Other Contractor Personnel Trained in PS Operations

The Contractor shall develop an appropriate emergency PS Call-Out plan to provide trained personnel on-call after normal workday hours for pump station emergencies. This PS Call-Out shall be sent to the Engineer on a weekly basis, with the EMC Dispatch Center Emergency Call-Out Plan. (Refer to Article 4.0).

OSHA safety regulations must be followed at all pump stations. Any Contractor personnel entering a pump station shall be properly trained and equipped for confined space entry.

The Pump Station Manager shall be notified of any reports of possible hazardous materials in the pump station wet pits, and he shall be responsible to immediately contract the services of an approved full service materials waste contractor to remove the hazardous material and dispose of properly off of state property. (Refer to Article 3.0)

The contractor's responsibility is to provide the immediate hazmat response by an approved company and insure compliance in accordance with Article 3.0. The Department is responsible for payment to the approved hazmat company for their services only.

8.4.2 STATION PROCEDURES AND RESPONSE DOCUMENTATION

EMC personnel shall not manually operate the pumps with insufficient wet pit water elevation, for general maintenance operations, including pump inspection, wet pit cleaning, and all other wet pit work. Contractor shall use his own pump equipment to de-water the wet pit.

Two log books are maintained in each pumping station to document entry/inspection. The Contractor shall maintain the log books so that one book contains the current year information and the second log book contains information recorded in the previous years. In January of each year, the Contractor shall transfer the sheets from the current year log book to the previous year log book and place blank sheets in the current year log book. The Contractor shall furnish a new log book for newly rehabbed pump stations. The log book shall not be altered or removed from the station.

There are specific procedures, which are required of all personnel when entering or leaving any pump station. It is necessary to:

- Notify the EMC Dispatch Center of arrival (10-7)
- Complete log book chart I, with the date, time, persons name and reason for entry
- Upon completion of inspection, record the observations in the required charts in the log book.
- Notify the EMC Dispatch Center to issue a Ticket for any deficiencies, observed during the inspection. (Refer to Article 4.0 for Ticket requirements and procedures.) Record the ticket number and the deficiency in the logbook.
- Acknowledge any alarms before departure
- Check all pumps that are not tagged "Out of Service" and set in the auto position (H-O-A switch) immediately before departing the pump station
- Secure all station doors and hatches
- Turn alarm switch to ON position
- Notify the EMC Dispatch Center of departure (10-8)

8.4.3 PS ALARM RESPONSE

Upon receipt of an AEGIS and/or SCADA Pump Station alarm, the EMC Dispatch Center shall:

1. Create a ticket.
2. For all alarms, except entry alarms, dispatch a patrolman to the station, to check the alarm. Arrival shall be within one hour of the receipt of the alarm. For entry alarms (Zone 1), notify the IDOT ComCenter and the respective police department for the station, for a police escort for the patrolman. He shall not enter the premises without having the pump station investigated by the police. (Refer to Article 4.0 for information on procedures for incidents of intrusion, vandalism or theft).

Upon arrival at the station, the patrolman shall:

1. Notify the EMC Dispatch Center of the arrival information, including a notation of all alarms flashing on the annunciator and SCADA panel.
2. Record all information on the incident in the log book
3. Perform all necessary repairs required to restore the pump station to its normal operating condition, if possible. (If follow-up repairs are needed in an emergency situation, notify the PS Manager immediately.)
4. Notify the EMC Dispatch Center, as to status of problem, whether it was cleared or if follow-up work by the SCADA Specialist or PS Crew is necessary, before departing the pump station. (All response information shall be recorded on the ticket)
5. In the event of a power failure alarm (Zone 3), monitor the power outage status at regular intervals and notify the Pump Station System Manager and the IDOT ComCenter if a high water level is imminent. (Temporary Pumping Requirements as stated herein shall be applied.)

8.4.4 STATION PRE-STORM CONDITION CHECK

Upon receiving a storm warning, code Red or Black, from the IDOT ComCenter or IDOT Engineer, the Contractor shall dispatch sufficient trained personnel to initiate these actions within one hour:

1. Check the operating status of each pump station
2. Check the condition of the trash on bar screen(s), clean if necessary
3. Check the status of the low point inlet and catch basins for the pump station, if found clogged notify IDOT Com Center immediately.
4. Submit a checklist (spreadsheet), indicating the time each pump station was checked, to the PS Engineer when completed.

8.4.5 WATER ON PAVEMENT SITUATIONS

The responding patrolman shall be equipped with the necessary measuring devices to trouble shoot and mark the water level with a reference point.

Upon observing Water on the Pavement (WOP) or extremely high water levels at the station, the Patrolman shall immediately notify the EMC Dispatch Center, who shall in turn notify the IDOT ComCenter.

Immediately after entering the station, the dispatched patrolman shall report the following information:

1. Pumps Running -- Yes or No.
2. Water Depth in Wet Well
3. Depth of Water on Pavement
4. Street Inlet Clogged -- Yes or No

The patrolman shall obtain a ticket number from the EMC Dispatch Center and complete the station log book, Chart W. All ticket information and WOP report information shall be relayed to the EMC Dispatch Center within one (1) hour of receipt of information from the field. All WOP report tickets shall be marked for follow-up until the pump station system is back to normal operation and there is no water on the pavement. During the workday the Engineer shall be immediately notified by telephone of all WOP incidents. In addition to the Ticket summary report, all WOP reports shall be faxed to the Engineer by 8 a.m. the next day.

When there is water on the pavement the Contractor shall retrieve the archived data from the pump station PLC and email to IDOT Engineer within 24 hours.

During high water level or WOP conditions, the patrolman shall remain at the station unless approved otherwise by the PS System Manager.

8.4.6 STATION POST STORM CONDITION CHECK

After each major rainstorm, the pump station crew shall:

- Clean the trash rack bin, bar screen, and the area between the automatic trash rack/bar screen and the inlet sewer to the bare concrete floor.
- Check WOP float and probe sensor for proper operation, and remove debris, and
- Check the inlet/catch basins. If clogged, notify IDOT ComCenter.

8.4.7 TEMPORARY PUMPING REQUIREMENTS

The Contractor shall provide and install temporary portable standby pumps to maintain adequate total station outflow capacity as described in Table P-1.

The Contractor shall submit a detailed temporary pumping operating plan, to the Engineer for approval, at the Pre-Construction meeting, for all maintenance activities which will directly affect normal inflow and outflow pumping operations. The Temporary Operating Plan submittal shall include a list of suppliers that, on an immediate on-call basis, can provide the Contractor with temporary pumps, or generators, to maintain the outflow capacity.

A back-up generator(s) shall be immediately mobilized to each pump station when the Contractor is notified of a high water level or alarm, or water on the pavement due to a power failure. Upon

approval of the Engineer, the Contractor may utilize the two 200KW generators which are normally kept in state stock. These generators may not be considered in the Contractor's temporary pumping operations plan.

8.5 SERVICE COMPANIES

8.5.1 SUBMITTALS OF SERVICE COMPANY NAMES

The Contractor shall submit the following, for Engineer approval, at the Pre-Construction meeting:

- Names, addresses qualifications of at least six potential vertical/submersible services repair companies within the tri-state area of Illinois/Indiana/Wisconsin.
- Name(s) of lab facilities that are certified and equipped to test oil and other lubricant fluids.

8.5.2 SERVICE COMPANY WORK

When the Contractor is unable to complete repairs to pump station equipment, the Contractor shall provide an IDOT approved Service Company to supplement his forces in order to meet contract requirements.

The Contractor shall provide all labor, equipment, and general services necessary to schedule and assist a specialty service company in conducting various comprehensive testing and inspections, including routine and non-routine work.

The Contractor shall coordinate the work with the service companies and provide qualified personnel to:

- Allow free and clear access to and from the pump station and all equipment
- Open and close all enclosures to provide access to the electrical equipment being inspected, replaced and/or repaired.
- Notify the power utility company to schedule all power outages required for the project.
- Perform all switching, de-energizing and re-energizing of electrical equipment
- Perform lock out tag out procedures
- Provide safe working conditions in accordance with OSHA requirements
- Assist in data collection when requested by the Engineer

8.6 SCHEDULED DAILY MAINTENANCE

8.6.1 DAILY SCADA MAINTENANCE

The Contractor shall be responsible for proper operation and maintenance of all SCADA System equipment described herein.

On a daily basis, the SCADA Specialist shall review the daily operations of the SCADA System. The SCADA System, including the Master, Slave and RTU equipment shall have its periodic maintenance activities/programs completed by the SCADA Specialist. This work would include, but is not limited to system back-ups, central algorithms, Windows OS debugging, Tescode and/or RSView Programming, Liquitronic 5 Firmware, modem configuration, database and archive array configuration and collating.

- Keep back-ups of all system software/firmware. Any changes to the system shall be submitted to the Engineer for approval, before execution. System changes shall be documented on tickets for documentation.
- Troubleshoot any problems related to network configuration of the system, troubleshoot any Windows OS and/or RSView processing errors, modem configuration, and telecommunication line testing (including network high-speed lines, dedicated leaded lines and dial-up lines).
- Upload and download RTU software configuration and application files, archive array configuration data and review the status of the SCADA system and alarms. The SCADA

Specialist shall complete all Tescode programming setpoint changes and remote configuration. A total RTU programming disk shall be stored and updated by the SCADA Specialist in each PS SCADA panel and stored in an appropriate sealed case.

- Shall perform updates to OS and GUI software when released by the manufacturer.
- Shall perform software revisions, program and screen modifications required to integrate additional PLC's or devices in the pump station system into the existing central (Schaumburg) and satellite (Contractor Dispatch Center) processors. Processor functionality and integrity shall be maintained with each added device. Any device furnished, installed, and terminated to pump station PLC or removed from monitoring, including but not limited to the gas detectors and fire alarm systems during the contract year shall be configured and interfaced with the station PLC and HMI unit screens. This work shall be included under routine maintenance of the pump stations system. IDOT engineer shall be notified prior to any changes and modifications to the SCADA system.

The Contractor shall add any pump station that will become under maintenance during contract year to the SCADA system in order to make a complete operational system and shall develop new screens at all processors. The screens shall be identical to existing pump station screens, such as the pump station information screen, control screen, main pump station screen and status screen with all devices in the pump station properly monitored.

The Contractor shall maintain all SCADA Hardware and software this will include but not limited to RSVIEW 32, ControlLogix5000, RSLinx, Winbench, Liq V as required and all communication media to connect to remote pump stations. Contractor shall also maintain all remote SCADA hardware and software at the pump stations this will include but not limited to ControlLogix PLC, HMI unit, Liq. V PLC. The contractor shall provide a yearly technical support as required for all pump station SCADA system software.

8.6.2 DAILY AEGIS MAINTENANCE

The Contractor shall be responsible for proper operation and maintenance of all AEGIS System equipment. The Contractor shall maintain:

- One AEGIS Silent Knight 9500 pump station alarm receiver,
- One AEGIS Silent Knight 9000 backup unit receiver,
- One printer at the IDOT Electrical Field Office (EFO),
- One AEGIS receiver in the Contractor's EMC Dispatch Center, and
- All existing alarm transmitter units at each pump station including any new units added during the contract year and all associated equipment.

The Engineer shall provide the EMC Dispatch Center with an AEGIS Alarm Zone code list.

The Contractor shall assure that all AEGIS units are functioning for call out to the receivers and shall supply and program prom chips as required for each alarm transmitter unit. A 20-second time delay shall be programmed to prevent nuisance alarms due to contact bouncing.

The AEGIS system shall be configured to execute a 24-hour communication check. This daily check shall be monitored and documented by dispatchers at the EMC Dispatch Center; tickets shall be created for any problems. The weekly report of the communication checks shall be submitted to the Engineer.

The Contractor shall maintain one alarm center in Bureau of Traffic' Electrical Field Office for windows monitoring software for single user module, 250 account version, and provide a "one year office hours" support. The Contractor shall maintain the software and configure to make a complete operational system at all times.

8.6.3 DOCUMENTATION OF DAILY SCHEDULED MAINTENANCE

All preventive maintenance reports and inspections shall be emailed to the IDOT Engineer and Contractor Pump Station System Manager directly from the pump station, when follow-up work is required. All maintenance reports shall be submitted on a CD in the monthly book.

The Contractor shall conduct field survey to provide and maintain a Fiber Drawing of all pump station termination, connection and splice points for the SCADA system, which shall also show fiber color, number and assignment. The Contractor shall provide and install Microsoft Office 2007 with Access and AutoCad LT 2009 on the SCADA engineering processor.

8.7 MONTHLY PS QUICK CHECK – ALL STATIONS

The Contractor shall perform a monthly PS quick check at all pump stations. The patrolman shall notify the EMC Dispatch Center to create a Ticket for all deficiencies or malfunctions found.

During the inspection, check the following:

1. Are inlets clear of debris?
(If clogged on expressway stations, radio Com Center; for off expressway stations, create a ticket).
2. Is grass cutting required?
3. Is fence secure?
4. Is building roof free of leaks?
5. Are doors, windows, walls, and hatches secure and free of graffiti?
6. Dry pit condition OK?
7. Alarm panel OK? (No alarms holding)
8. Lighting fixtures outages?
9. MCC panel indicator lamps OK?
10. Water level meters at proper levels?
11. Ground detection indication lamps OK?
12. Is trash bin free of debris?
13. Does the bar screen need cleaning and free from debris build-up?
14. Is wet pit free of hazardous materials?
15. Pump On/Off operation OK? (Simulate a call)
16. Abnormal noise from pumps?
17. Is piping free of leaks?
18. Is pump free of abnormal noise or vibration?
19. Is oil level consumption OK?
20. Is grease operation OK?
21. Are grease and oil lines free of leaks?
22. Is thermostat set properly and heater operating properly?
23. Are dampers and exhaust system OK?
24. Verify gas detector calibration
25. Fire extinguisher OK?
26. Does floor need mopping ?

8.8 MONTHLY PREVENTIVE MAINTENANCE PROGRAM

The Contractor shall perform the following inspections and allow thirty (30) days between the inspections. A schedule/chart shall be submitted via CD that show the pump station, preventive maintenance programs (routine and non-routine) and date of completion for each program. Each preventive maintenance program shall have a monthly summary of item(s) require follow-up and associated ticket number. The schedule/chart(s) shall also include the status of all open tickets that require follow-up and shall be submitted at the end of each month. A copy of all routine and non-routine maintenance reports shall be submitted to IDOT Engineer via CD.

The Contractor shall update and maintain all P.S. tables to be true and accurate. The Contractor shall submit updates of a minimum of 6 pump stations per month starting in February and all must be completed by the end of October.

Pump Station Preventive Maintenance Program Schedule

8.8.1	Pump Inspection	Chart A	Monthly	All
8.8.2	Pump Maintenance	Chart F	Monthly	15
8.8.3	Automatic Trash Rack Maintenance		Monthly	9
8.8.4	Bar Screen Maintenance		Monthly	20
8.8.5	Compressed Air Tank Inspection	Chart S	Monthly	9
8.8.6	Flow Meter Inspection	Chart A	Monthly	23
8.8.7	Engine and Generator Maintenance	Chart K, M/P-10	Monthly	14
8.8.8	Transfer Switch Operation Maintenance	Chart C	Monthly	42
8.8.9	Air Induction Inspection	Chart U	Monthly	23
8.8.10	AEGIS Inspection	Chart E	Monthly	All
8.8.11	State Stock Inventory Summary		Monthly	All
8.9.1	Dry Pit/Wet Pit Submersible Pump Insp.		June & Dec.	39
8.9.2	Automatic Trash Rack Maintenance		June & Dec.	9
8.9.3	Vertical Pump Motor Maintenance		June & Dec.	12
8.9.4	Actuators, Valves & Sluice Gate Oper.Insp.	Chart B	Min. 8 per Mo.	All
8.9.5	Side Volute Discharge Pump Maintenance		June & Dec.	4
8.10.1	Air Induction Heater & Space Heater Insp.		November	27
8.10.2	AEGIS Alarm System Inspection	Chart E	January	All
8.10.3	SCADA Inspection	P-100	Min. 15 Jan-Mar	All
8.10.3	Wet Pit Inspection	P-9	Min. 6 Apr-Oct	All
8.10.5	Pump Control System Inspection	P-6	Min. 15 Jan-Mar	All
8.10.6	Pump Station Inspection and Maintenance	P-4	Min. 4 Jan-Nov	All
8.10.7	Infrared Roof Inspections		July or Aug	All
8.10.8	Pump Capacity, Motor Current, Voltage, Moisture, Megger Test	Chart Z & P-5	Min. 8 Jan-May	All
8.10.9	Impeller Adjustment	P-5	Min. 5 Jan-Feb	11
8.10.10	Submersible Pump Inspection	P-8	Min. 5 Jul-Oct	39
8.10.11	Oil Analysis		Min. 8 Jul-Nov	All
8.10.12	Main Circuit Breaker Testing Inspection	P-7	May 2011	3
8.10.13	Flow Meter Inspection		Min. 5 Jul-Oct	23

8.10.14	Fire System Inspection		Min. 3 Jul-Oct	30
8.10.15	Motor Control Center Inspection		Min. 4 Jan-Nov	All
8.10.16	Tube Type Pump Maintenance		September 2011	3
8.10.17	Yeoman Pump Maintenance		June 2011	5
8.10.18	Generator Maintenance	P-10	October	15
8.10.19	Equipment Identification		August	3

8.8.1 MONTHLY PUMP OPERATION INSPECTION – ALL STATIONS

The Contractor shall perform the following and record on Chart A:

- Operate each pump and check alternator or selector switch for proper sequence in accordance with recommended manufacturer’s procedures. Caution: Do not draw down the wet well level past the designated stop elevation under any circumstances.
- Set the selector switch on the pump with the least number of hours as the lead pump.
- Operate each unit noting the current draw and compare with the motor plate and note any deviation, and/or any abnormal operating sounds
- Record number of starts
- Take flow meter reading and record on log chart
- Record number of starts and hours run of each pump

The Contractor shall submit a copy of the chart A on a 3.5 inch disk using spreadsheet software, as approved by the Engineer, once every three months, in the monthly routine work submittal book.

8.8.2 MONTHLY PUMP MAINTENANCE

PS # 2, 3, 4, 7, 14, 24, 25, 26, 27, 29, 32, 33, 35, 47, 50

The Contractor shall inspect the oil lube system and greaser for proper lubrication; and inspect both oil and grease lines for leakage or clogging. In addition, the Contractor shall inspect the automatic greaser and manual cap for proper operation, and maintain the proper oil/grease level. All information shall be entered on log chart F. The Contractor shall also grease all fittings such as flap valves, check valves, gate valves, flow meters, and pumps.

At PS # 14, 32, 47, and 50 with the side volute discharge pumps, the Contractor shall lubricate the pump bearings with oil/grease when required, (minimum twice per year), inspect packing glands for leakage, lubricate motor, and clean the motor. In addition, the air release valves/pipes shall be inspected (replace when required) and cleaned.

8.8.3 MONTHLY AUTOMATIC TRASH RACK MAINTENANCE

PS # 4, 5, 21, 22, 23, 26, 28, 35, 46

At pump stations with automatic trash racks, the Contractor shall:

- Grease the rake assembly and head shaft bearings with EP#2 waterproof grease, grease drum bores on rope drum,
- Grease teeth on bull gear and pinion,
- Grease chains where applicable, and slide block channels
- Check limit switches.

The Contractor shall use Bison #88 molybdenum grease or may substitute environmentally safe grease upon approval by the Engineer.

8.8.4 MONTHLY BAR SCREEN MAINTENANCE

PS # 2, 3, 4, 5, 9, 10, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 39, 40, 46, 47, 50, 51 and 52

At pump stations with bar screens, the Contractor shall inspect the bar screen, rake and manually clean the bar screen and remove all debris and silt in the area between the sewer and the trash rack/bar screen. The trash rack itself shall be kept free of debris.

8.8.5 MONTHLY AIR COMPRESSOR INSPECTION

PS # 4, 24, 25, 27, 29, 33, 40, 50, 51

The Contractor shall check the compressor and air tank for proper operating pressure in the pump stations, and drain water from tanks. (The tanks are used for reserve air supply for the bubbler control systems.)

Record the inspection results and the date tank was inspected on chart S in the log book.

8.8.6 MONTHLY FLOW METER INSPECTION

PS # 4, 5, 7, 9, 10, 17, 21, 23, 24, 25, 26, 27, 28, 29, 30, 33, 34, 35, 39, 42, 46, 50, 51

The Contractor shall check the flow meters in each station for proper operation and record their readings on chart A in the log book. A grease fitting is furnished in the head plate and requires greasing once a month, to replace grease that has worked out in the operations. The Contractor is advised not to over-grease the meter, and to lubricate with Lubriplate grease, available from Sparling, Inc.

8.8.7 MONTHLY GENERATOR INSPECTION

PS # 9, 11, 15, 18, 19, 28, 34, 36, 39, 41, 42, 47, Two in State Stock,

Also Base Stations Moveable Bridges, IDOT Schaumburg Headquarters and Traffic Systems Center (refer to Article 6.0), and the Rodenburg Maintenance Yard (refer to Article 11.0).

Engine driven pumps and back-up generators in state stock shall be inspected. The Contractor shall:

- Check control panel and transfer switch operation
- Check engine oil and coolant levels
- Check that block heater is working
- Check battery charging system
- Check for holes or leaks and loose connections in the air cleaner
- Check fuel level and fuel transfer pump operation
- Check for exhaust system leaks or restrictions
- Drain the condensation trap
- Check all meters, gauges, and indicator lamps
- Check generator fuel and note level.
- Check for fluid/fuel leaks.
- Check oil reservoir and battery acid level and maintain proper operating levels.
- Check the air filter monthly and change at specified intervals
- Exercise generator at full load for one (1) hour
- Prepare, prime, and paint rusting metal (to match existing paint)

The Generator check list, log P-10, shall be completed and submitted to the Engineer in the routine maintenance monthly submittal book. Tickets shall be created for any problems found.

Diesel fuel shall be filled to the proper level at all times, for the generator operation. If fuel level is less than one half of full level, then a ticket shall be created to schedule the refill of the tank.

8.8.8 MONTHLY TRANSFER SWITCH OPERATION INSPECTION

PS # 2, 3, 4, 5, 7, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 42, 44, 46, 47, 50, 51 and 52

The Contractor shall exercise the transfer switch, on a monthly basis, to inspect for proper transfer and time delay to secondary power source and time delay from secondary to primary and shall be recorded in the chart. This work shall apply for pump stations shall be noted in chart C of the logbook.

8.8.9 MONTHLY AIR INDUCTION INSPECTION

PS# 4, 7, 8, 9, 10, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 34, 35, 40, 50, 51 and 52

The Contractor shall change the air induction filter, clean the bird screens, and clean heating element insulators to maintain proper ventilation within the pump station. The date shall be noted on chart U in the log book. The Contractor shall supply and store the proper filters at each pump station.

8.8.10 MONTHLY AEGIS MONTHLY INSPECTION – ALL STATIONS

The Contractor shall check the AEGIS alarm system for each pump station which are not being monitored by the central SCADA system. This inspection will consist of transmitting of all the possible alarm codes for that specific station. Note that each station has an individual listing for zone 2 alarms. When checking the alarm system, each item that is incorporated into a zone 2 alarm shall be checked. The low and high level alarms shall be checked by a continuity test or by jumpering the relay. The Contractor shall not use the pumps to drawn down to a low level. All results shall be entered in chart E in the log book for each station.

8.8.11 MONTHLY STATE STOCK INVENTORY MAINTENANCE

The Contractor shall check the State stock as follows:

- Rotate motor/pump shaft, few revolutions by hand
- Fill oil reservoir to the proper level
- Check bearings for proper lubrication
- Clean motor windings with air, to remove any dust accumulation
- After cleaning, provide protective covering for motors to prevent dirt, moisture and other contaminates

A spreadsheet noting pump station name, inventory items, and work performed on inventory items in the prior month shall be submitted in the monthly routine work submittal book.

8.9 SEMI-YEARLY PREVENTIVE MAINTENANCE PROGRAMS

To be completed by June and December of each year. A copy of all reports shall be submitted to IDOT Engineer via email.

8.9.1 SEMI-YEARLY DRY PIT/WET PIT SUBMERSIBLE PUMP MAINTENANCE

PS # 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 29, 30, 31, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 48, 51, 52

The Contractor shall visually inspect pump impeller for clogging, shall inspect oil reservoir for contaminants, shall check and clean air release pipes/valves, and shall flush the cooling system from debris. The wet pit submersible pumps shall be washed down with a pressure hose.

8.9.2 SEMI-YEARLY AUTOMATIC TRASH RACK MAINTENANCE

PS # 4, 5, 21, 22, 23, 26, 28, 35, 46

The Contractor shall grease guides with Bison #88 molybdenum disulfide, and grease, lubricate, and perform an oil change on the worm reducer and coupling. The band brake assembly shall also be inspected and tightened evenly as required.

8.9.3 SEMI-YEARLY VERTICAL PUMP MOTOR MAINTENANCE

PS # 2, 3, 4, 7, 14, 24, 25, 26, 27, 29, 33, 35

The Contractor shall check motor heaters and clean the motor inside and out, wiping off dirt, dust, oil and water from external surfaces of the motor. Any dust or debris from the ventilating air inlets shall be removed. The motors shall be cleaned internally by blowing with clean, dry compressed air.

8.9.4 SEMI-YEARLY ACTUATORS, VALVES & SLUICE GATE OPERATION – ALL STATIONS

Minimum of eight (8) stations are due per month from January through June and July through November and the inspections for each station shall be spaced six months apart throughout the term of the contract.

The Contractor shall operate the flap valves, check valves, gate valves and sluice gates at all the pump stations. All the valves and gates shall be lubricated with environmentally safe grease.

The Contractor shall check the actuators' lubrication consistency and level. If required, it shall be filled or replaced. All electrical connections shall be inspected and tightened. The Contractor shall also check for mechanical damage.

All results shall be entered into chart B in the log book for each station. Create tickets for any deficiencies found and enter the ticket numbers on chart B. When repairs are complete, chart B shall be submitted in the monthly routine work submittal book.

8.9.5 SEMI-YEARLY SIDE VOLUTE DISCHARGE PUMP MAINTENANCE

PS # 14, 32, 47, and 50

The Contractor shall lubricate the pump bearings with oil/grease, inspect packing glands for leakage, lubricate motor, and clean the motor on the side volute discharge pumps. In addition, the air release valves/pipes shall be inspected (replace when required) and cleaned.

8.10 YEARLY PREVENTIVE MAINTENANCE PROGRAMS

8.10.1 YEARLY AIR INDUCTION HEATER AND SPACE HEATER INSPECTION

PS# 4, 5, 7, 8, 9, 10, 17, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 34, 35, 40, 41, 43, 44, 50, 51, 52

Before each heating season, the Contractor shall check the air induction heating elements and space heating elements, replace defective heating elements, if any, check and lubricate, if necessary, fan motors and damper mechanisms, check thermostat and settings and clean the finned heating element and fan inlets.

8.10.2 YEARLY AEGIS ALARM SYSTEM INSPECTION - ALL STATIONS

Inspections shall be completed during January of each year

During January of each year, the Contractor shall test the AEGIS alarm system by transmitting all the possible alarm codes for each station. Note that each station has an individual listing for zone 2 alarms. Each item that is incorporated into a zone 2 alarm shall be checked. The low level alarm shall be checked by continuity test or by jumpering the relay. All results shall be entered in the log book for each station, in chart E. A copy of each log P-1 shall be included in January routine maintenance work documentation book for each year.

8.10.3 YEARLY SCADA INSPECTION AND DOCUMENTATION – ALL STATIONS

A minimum of fifteen (15) stations are due monthly in January, February, and March, with the program to be completed during April of each year. Each station shall be inspected in the same month in the second year of the Contract, if renewed.

The SCADA specialist shall physically inspect all of the equipment and wiring, and record on log P-100 the digital inputs/outputs, and analog inputs for the SCADA system. Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-100. When repairs are complete, the log P-100 reports shall be included in the monthly routine work submittal book.

The Contractor shall inspect the primary, and where applicable, the secondary water level monitoring systems in each station. The Engineer shall be present for each inspection. This work shall consist of physically measuring the water level in the wet pit and comparing that value with the primary and secondary reactive air system of the SCADA unit, the bubbler system implemented into the MCC, and the TLC water level monitoring system. The Contractor shall use the Meri-Cal air pressure calibration device with an associated hand pump, fittings, and valves required to calibrate the primary, secondary reactive air system and other bubbler systems. The Contractor shall use the calibration device any time calibration of the above equipment is required during the contract year.

This inspection shall also include the inspection of the trash rack and creek levels reactive air systems. Create tickets for any deviations over 1/2 foot and enter the numbers on the report log P-100. All work required on the SCADA system shall be coordinated with the Engineer and completed by the SCADA Specialist.

After the inspection the Contractor shall download system control information (pull in a new image) and download the archive of the main pump starts and stops. The CD shall be included with the monthly routine work submittal book.

8.10.4 YEARLY WET PIT INSPECTION – ALL STATIONS

Minimum of six (6) stations due per month from April through October with the program to be completed during November of each year. Each station shall be inspected in the same month in the second year of the Contract, if renewed.

The Contractor shall complete the wet pit inspection of all pump stations. The Contractor shall use his own portable pump to draw down the wet pit to a low level and maintain the existing inflow water in the wet pit. The Contractor shall:

- Inspect all grease lines to ascertain if any are broken, clogged, or not secured
- Inspect the integrity of all equipment attached to the structure such as the air bell, air line and the floats
- Inspect the floats for operational efficiency, and clear them of any debris
- Inspect the probes for operational efficiency, and clear them of any debris
- Take a photograph (7.0 Mega Pixel digital camera & flash) of any bowl assemblies that show any wear on the impeller and/or if the suction is clogged with debris. The photos shall be appropriately labeled and placed in a sheet album with the station report, log P-9
- Inspect the silt accumulation and document levels
- Visually inspect the inlet sewer from inside of the pump station
- Maintain existing wet pit lighting

Each report, including photo album, shall be included with the monthly routine work submittal book. Create tickets for any deviations found and enter the numbers on the report log P-9.

8.10.5 YEARLY PUMP CONTROL SYSTEM INSPECTION – ALL STATIONS

Minimum of fifteen (15) stations due per month from January through March with the program to be completed during April of each year. Each station shall be inspected in the same month in the second year of the Contract, if renewed.

The Contractor shall inspect all pump control systems within all pump stations. The Engineer shall be present for each inspection. This work shall include inspection of a bubbler, electrode, and float systems, whichever secondary control system is utilized. The inspection shall consist of all starts, stops and alarm control elevations. Any control elevations which are different than the required elevations shall be noted and corrected.

Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-6. Each report shall be included with the monthly routine work submittal book.

8.10.6 YEARLY PUMP STATION INSPECTION AND MAINTENANCE – ALL STATIONS

Minimum of four (4) stations due per month, January through November, with program to be completed during December of each year.

The Contractor shall conduct an annual comprehensive inspection of the electrical and mechanical equipment at each pump station using log P-4 and shall:

- dispose of any debris found on the grounds
- remove or paint over graffiti with comparable paint
- for stations with flat roofs drain any large recessed areas of standing water.
- remove any debris build up in gutters, drains or down spouts
- replace any glass blocks or broken windows
- patch or repair cracks found in concrete
- clean all cabinets, walls, motors and equipment by wiping with a damp cloth
- wash floors with a mop or a suitable floor cleaner
- lubricate exposed trolley drive pinion and wheel teeth
- repair all failed caulk around windows, lintels, doors, and ventilation components
- seal all gaps or openings between structures and concrete or blacktop with material in accordance to manufacturer specifications

Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-4. A re-inspection will be scheduled by the Engineer following completion of any necessary repair work. When repairs are complete the P-4 reports shall be included in the monthly routine work submittal book. The stations shall be inspected in the same month in the second year of the Contract, if renewed.

8.10.7 YEARLY PUMP STATION ROOF INSPECTION AND MAINTENANCE – ALL STATIONS

Once per year, in April, the Contractor shall conduct annual roof inspections and maintenance. The Contractor shall provide an Infrared Camera by FLIR Systems Model ThermaCAM E4 or equivalent for the roof inspections and other preventive maintenance equipment inspections herein or as requested by the Engineer.

During daytime hours the Contractor shall thoroughly clean the roof surface of dirt, debris, and contaminants. After sunset the roof shall be inspected for proper drainage and physical condition with the ThermaCAM E4. The Contractor shall note on the inspection log any hole or cracks, loose or dry laps, loose fasteners, buckles, wrinkles, ridges, etc.

Tickets shall be created for any deficiencies found on this inspection and numbers entered on the inspection report, log P-4R. A re-inspection will be scheduled with the Engineer following completion of any necessary repair work. When repairs are complete the P-4R reports shall be included in the monthly routine work submittal book.

The Contractor shall perform roof repairs as described below under routine maintenance:

Small Holes and Cracks:

Clean surface, apply mastic (roof cement) 1/8" to 1/4" thick into the hole or crack using a roofer's trowel or gloved hand, working the mastic into the opening and 2 to 4 inches beyond.

Large Holes and Cracks:

For damaged areas larger than 1/4" repair, clean surface, use self-adhering SBS Modified Asphalt Membrane by peeling off the backing and pressing it onto the area to remove any entrapped air. A coating of mastic (roof cement) shall be applied over all repaired areas.

Loose or Dry Laps, Fishmouths, Buckles, Wrinkles, Ridges:

Cut defective material back to an adhered area. Repair area as needed with mastic and/or membrane and mastic as stated above.

Loose Mechanical Attachment, Termination Bar:

Remove loose fasteners. Re-secure base flashings (or new flashing material) through tin discs of a larger diameter or fastened to an adjacent location (new hole).

8.10.8 YEARLY PUMP CAPACITY, MOTOR CURRENT, VOLTAGE, MOISTURE, MEGGER TEST – ALL STATIONS

Minimum of eight (8) stations due per month, January through May, with program to be completed by June of each year.

The Contractor shall conduct a pump capacity, motor running current, voltage measurement, megger, and Yeoman submersible pump moisture tests. The Contractor shall also utilize the services of the specialty services subcontractor for this test. The Contractor shall be responsible for providing or storing water for testing, not to exceed high level elevations.

The Contractor shall provide all necessary equipment, tools, material and labor to set up the pumping stations for capacity testing using either the recirculation method, wet pit draw down method or the discharge chamber method with discharge sewer and recirculation gates closed, as applicable for the station.

Prior to testing, record all necessary name plate information for pump and motor. Pump testing will require the presence of at least two personnel equipped with radio communications and measuring tape and block.

A draw down test shall be done in all the pump stations. Record flow meter reading and measure accumulated pumped water in the discharge chamber where sluice gates are present to store water in the discharge chamber. The pumps shall be tested for at least for 1 minute duration. Record all readings, including full load current, RPM on vertical pumps, flow reading and water level change. The testing shall be performed with the Pump Station technician present.

The following data shall be recorded and submitted to the Engineer on log P-5:

- Water depth
- TDH
- Capacity
- Vibration
- Current
- Voltage
- Insulation resistance to ground
- Pressure

In addition, the Contractor shall megger all motor windings and feeder cables. Any reading below 1 Mohm will require the Contractor to determine the source or cause of the low reading and make prompt repairs as required. A copy of the log P-5 shall be kept in the log book. Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-5. A copy of the results of the capacity and megger test on log P-5 and on a CD shall be submitted to the Engineer with the monthly routine work submittal book. The stations shall be reinspected in the same month in the second year of the Contract, if renewed.

The Contractor shall retrieve all archived data from the pump station PLC upon completion of the pump capacity test and shall submit the archived data on a CD to the IDOT Engineer.

Pumps testing below 80% shall be immediately re-tested and confirmed for low capacity. The Contractor shall submit a list of all low capacity pumps found with the test results at the end of the month.

**8.10.9 YEARLY IMPELLER ADJUSTMENT OF VERTICAL AXIAL FLOW PUMPS
PS # 2, 3, 4, 7, 24, 25, 26, 27, 29, 33, 35**

Minimum of five (5) stations due per month, during January and February. This adjustment shall be done only when pumps do not perform according to their design.

The vertical axial flow pumps shall be checked for proper impeller settings in accordance with manufacturer's specifications. This work shall include dropping the suction bell to inspect the wear ring and impeller for wear. The Contractor shall record "as found" measurements, record the adjustment setting on log P-5 and include it in the monthly routine work submittal book.

8.10.10 YEARLY SUBMERSIBLE PUMP INSPECTION

PS # 2, 3, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 27, 28, 29, 30, 31, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 48, 51, 52

Minimum of five (5) stations due per month from July through October with the program to be completed during November of each year

The Contractor shall remove, inspect and service all submersible pumps, each contract year. Service work shall include an oil change, checking and recording the clearance between impeller and wear ring, and an inspection of cooling jacket passageways to assure no blockage would cause low water flow and high temperature. This work shall be done in accordance to manufacturers' specifications and instructions. Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report, log P-8.

8.10.11 YEARLY OIL ANALYSIS - ALL STATIONS

Minimum of twelve (12) stations due per month, from July through October.

The Contractor shall obtain suitable test containers from an approved lab facility. Collect oil samples from the motor upper and lower bearing compartments, dry pit/wet pit submersible pumps and all generators. The oil shall be drawn from the equipment reservoir. The oil should drain for a few seconds before collecting the sample. A minimum of two (2) ounces of oil shall be used for analysis. Do not use the same container for different equipment or for different compartments of the same equipment.

Samples shall be taken after running the motor, pump or engine or within fifteen minutes after the equipment is turned off. This work shall be done along with the capacity and vibration test.

The Contractor shall provide the laboratory with the brand and type of oil, type of equipment from which the sample was taken, number of days since the last oil change, and any suspected abnormalities in the equipment. Each sample of oil shall be identified with the equipment and compartment from which the sample was taken. The Contractor shall ship the oil samples to the lab facility within one month of collection.

The lab facility shall conduct a wear particle analysis to determine:

- Wear metals
- Contaminants
- Additives elements
- Viscosity
- Solid percent volume
- Water percent volume
- Fuel where required
- Particle counting and direct reading ferrography

Create tickets for any deficiencies found from the lab testing and submit the lab reports to the Engineer on a CD with operating software that can utilize existing data for trending. A condition summary report shall be submitted on paper. Based upon the lab report, the Engineer may request additional analytical ferrography testing. The oil shall be changed if the lab results indicate that the oil is contaminated. All charges for lab work, shipping, and changing of oil etc., shall be covered under routine maintenance. A summary of the report shall be submitted via email at the end of the program.

8.10.12 YEARLY MAIN CIRCUIT BREAKER TESTING INSPECTION

**PS # 3, 5 and 34 to be inspected during May of 2011
and**

PS # 2, 20 and 21 to be inspected during May of 2012

The Contractor shall obtain an approved engineering services company for testing the main circuit breakers, branch circuit breakers and motor starters in three (3) pump stations each year. The IDOT Engineer shall be notified at least twenty-four hours in advance to witness the tests. The Contractor shall coordinate with the electrical utility to turn power off and on where required. The Contractor shall furnish the test set and operator along with all necessary fittings, cables and connectors to connect the test set to the circuit breakers. Prior to testing, a general clean up of the buses and cabinets are required.

Testing shall consist of visual and electrical tests as shown on log P-7. Overcurrent relays and dash pots shall be inspected where present, and are to be set as directed by the Engineer. The inspection and testing shall also include the trip unit, contact resistance and insulation tests. Create tickets for any deficiencies found on this inspection, and enter the numbers on the inspection report, log P-7. The reports shall be submitted via email at the end of the program.

8.10.13 YEARLY FLOW METER INSPECTION

PS # 4, 5, 7, 9, 10, 17, 21-30, 33, 34, 35, 39, 46, 50, 51

Minimum of five (5) stations due per month from July through October with the remainder of the program to be completed during November of each year

The Contractor shall remove the meter heads out of the line and check the mechanism, note the condition of the pipe and straighten the vanes. The meter head shall be examined, cleaned, and parts replaced per manufacturer recommendations. Create tickets for any deficiencies found on this inspection.

The transmitter and receiver shall be tested and calibrated by a factory certified/approved representative.

8.10.14 YEARLY FIRE ALARM SYSTEMS INSPECTION

PS # 2, 3, 5, 9, 10, 11, 12, 13, 15, 16, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 39, 41, 42, 43, 44, 46, 50, and 52

Minimum of nine (9) stations due per month from July through October with the remainder of the program to be completed during November of each year.

The Contractor shall furnish a factory trained service representative and shall use factory authorized testing equipment for all testing procedures, to complete a comprehensive fire alarm system inspection and maintenance in accordance with NFPA 72 Chapter 7 and as recommended by the manufacturer.

All fire extinguishers in the fifty- (50) pump stations have been hydrostatically tested in 2002.

Upon completion of the inspections, a written report shall be submitted to the Engineer. This report shall identify all devices that were tested as well as any corrective measures that are recommended. Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report.

8.10.15 YEARLY MOTOR CONTROL CENTER INSPECTION – ALL STATIONS

Minimum of four (4) stations due per month, January through November, with program to be completed during December of each year

The Contractor shall perform the following inspection:

- A. Clean enclosure and control equipment by blowing out with low air pressure or vacuuming
- B. Check and clean contacts, relays and timers and visually inspect for damage or out of adjustment parts. Remove all dust off of electrical devices and equipment.
- C. Check motor control center indicating lamps and all switches and push buttons
- D. Circuit breaker maintenance:
 - Check connections
 - Exercise breaker

- Check trip setting
- E. Motor Starter Contact Maintenance:
 - Check contacts and burnish or replace, if necessary
 - Check coil and clean
 - Inspect arc chute for cracks or burns
 - Check contact pressure and measure contact resistance on all 3 phases
- F. Oil Dash Pots:
 - Check oil levels
 - Inspect settings
- G. Inspect wiring/conductors for overheating and discoloration
- H. Check sizing of motor overload heaters
- I. Check tightness of wire terminations and connections
- J. Check for proper labeling, provide and install missing labels
- K. Check wire tags/labels, provide and install missing tags or labels
- L. Check fans for proper operation and clean filters
- M. Check fuse disconnects for proper operations, keep fuse clips clean and tight
- N. Check fuses for proper size, and overheating
- O. Test equipment ground system of the station.

Create tickets for any deficiencies found on this inspection and enter the numbers on the inspection report.

**8.10.16 TUBE TYPE PUMP MAINTENANCE – YEAR 2011 ONLY
PS #5, 22 and 23**

The maintenance program shall be completed by September, 2011.

The Contractor personnel and/or service company shall:

- Remove the pumps, inspect and replace, if necessary, the upper mechanical seals. The condition of the mechanical seal is satisfactory if no fluid leakage (contaminant) or only light seepage out of the inner hole in the casing.
- Dismantle the pump partially, if fluid has leaked, which is evidence that the bearing has also been affected. Check the mechanical seals and replace if necessary.
- Replace the roller bearing grease, if water has penetrated into the bearing.
- Drain all the leakage fluid and the liquid seal, and refill with a sealing fluid as recommended by the manufacturer.

•
8.10.17 YEOMAN PUMP MAINTENANCE - YEAR 2012 ONLY

PS # 21, 27, 29, 30, 42

In June 2011, at stations with Yeoman Pumps, the Contractor shall:

- Drain, flush and refill the seal chamber with new oil.
- Inspect oil for water intrusion in the motor seal chamber.
- Inspect the cable for any signs of abrasion or damage.
- Inspect the impeller and casing wear ring.
- Notify the Engineer in advance of this scheduled work.
- Create tickets for any problems found during the inspection.

8.10.18 YEARLY GENERATOR MAINTENANCE

PS # 9, 11, 15, 18, 19, 25, 28, 34, 36, 39, 41, 42, 47, Two in State Stock

Also Base Stations (refer to Article 6.0), Moveable Bridges, the Rodenburg Maintenance Yard, Traffic Systems Center and the IDOT Schaumburg Headquarters (refer to Article 11.0)

The Contractor shall perform inspection and maintenance required for the standby generators in October of each year as follows:

- Change oil and oil filters
- Drain, flush, and replace coolant
- Replace cooling system hoses in 2012
- Replace thermostats in 2012
- Replace fan belts in 2012
- Check and adjust valves as necessary
- Conduct operational inspection to insure proper valve rotation
- Check fan hub
- Check pulley
- Check water pump
- Change the day tank breather
- Clean or replace the crankcase breather
- Change fuel filter
- Drain sediment from the fuel tank
- Clean accumulation of grease, oil and dirt on set
- Lubricate generator bearing
- Check vibration isolators for proper adjustment and conditions
- Check circuit breaker and transfer switch, and test equipment by simulating a power outage
- Check turbo pressure, adjust if necessary to manufacturer specifications
- Provide fuel system service to perform fuel polishing only in 2011.
- Record inspection on log P-10 in the log book and submit a copy of the report with the monthly routine work submittal book
- Tickets shall be created for any problems found

8.10.19 YEARLY EQUIPMENT IDENTIFICATION PROGRAM

Pump Stations 37, 29, and 25 in Year 2011

and

Pump Stations 47, 40, and 33 in Year 2012

The Contractor shall conduct a thorough inspection of three pump stations a year. The inspection shall include all termination points, wire labels, equipment labels, electrical equipment, pump and piping. All wiring shall be traced and properly labeled and identified in the pump station. The Contractor shall furnish and install all missing labels and provide four (4) copies of the following:

- Single line diagram – shall show type and size of electrical equipment, size of circuit protective conductor, protective device size and rating, contactors, bus bar size and detail power sources details

- Control Ladder Diagram for all circuits – shall show all relays, contacts, coils, transformers, fuses, timers and wiring terminations
- Point to point wiring terminations
- All electrical equipment physical and dimensional layouts – shall show locations, size type and conduit sizes
- All mechanical pump and piping equipment – shall show pump and piping layout and dimensions

The complete set of diagrams provided shall completely illustrate all wiring and equipment in the existing pump station. A soft copy of the diagram shall be submitted to IDOT in August of each year via e-mail in a PDF format. The Contactor shall also submit four (4) copies of the final record drawings and a copy in AutoCad format for IDOT approval in August.

8.11 PUMP STATION NON-ROUTINE MAINTENANCE:

The Contractor shall be advised that several routinely maintained items such as, but not limited to, the gas detector inspection, automatic transfer system service, adjustment of existing controls, removal and replacement of gas sensors, intrusion override key switch, motor balancing, SCADA equipment, motor inspection, pump re-building type 1-6, SCADA radio equipment inspection, pump station SCADA radio inspection, switchgear system inspection, pump repair and pump replacement, vibration testing and analysis, cleaning of wet pit, and wet pit power wash. Review Section 2 Special Provisions and Programs.

8.12 LOGS AND FORMS

A sample of logs and forms as required for this Contract will be available at the Pre-Bid Meeting.

8.13 TABLES

The Contractor shall update and maintain all tables to be true and accurate. The Contractor shall submit updates of a minimum of 6 pump station per month starting in February and all must be completed by the end of October.

PS	PUMP STATION LOCATION			RR CROSSING	OUTLET	STATION	CAP	PS
NO	MUNICIPALITY	MAIN ROUTE	NEAREST CROSS STREET	AT PUMP STATION	WATERWAY	GPM	CFS	NO
1		Reserved for future						1
2	NORTHFIELD	I 94 EDENS EXPY	WINNETKA RD	NONE	SKOKIE RIVER	54000	120	2
3	CHICAGO	I 94 EDENS EXPY	CALDWELL/PETERSON	NONE	N. BR CHICAGO RV	70000	156	3
4	FOREST PK	I 290 EISENHOWER EXPY	E. OF 1ST AVE	NONE	DES PLAINES RV	90000	201	4
5	CHICAGO	I 290 EISENHOWER EXPY	DES PLAINES AVE	NONE	CHICAGO RV	38000	85	5
6		Reserved for Future						6
7	CHICAGO	I 290 EISENHOWER EXPY	WELLS ST PLAZA	NONE	CHICAGO RV	6000	13	7
8	DES PLAINES	US 14 NORTHWEST HWY	1/2 MILE E. OF IL RT 45	WIS. CENTRAL	WELLER CREEK	3000	7	8
9	STONE PK	US 45 MANNHEIM RD	LAKE ST	NONE	ADDISON CREEK	24000	53	9
10	NILES	US 14 DEMPSTER ST	MILWAUKEE AVE	NONE	SEWER	1200	3	10
11	OAK FOREST	IL 50 CICERO AVE	158TH STREET	NIRC	MIDLOTHIAN CREEK	5400	12	11
12	MELROSE PK	IL 64 NORTH AVE	W. OF 25TH AVE	BRC	27"SS SILVER CREEK	11000	25	12
13	SKOKIE	US 41 SKOKIE BLVD	SO. OF OAKTON AVE	SKOKIE SWIFT	OAKTON SEWER	11000	25	13
14	RIVERDALE	WOOD / ASHLAND	139TH STREET	IHB & BRC	LITTLE CALUMET RV	11000	25	14
15	CHICAGO	79TH ST	KEDZIE AVE	NS	SEWER ON KEDZIE	5500	12	15
16	ROSEMONT	IL 72 HIGGINS RD	E. OF MANNHEIM RD	Wisconsin Central	WILLOW CREEK	5400	12	16
17	DES PLAINES	IL 58 GOLF RD	E. OF DES PLAINES RV RD	Union Pacific	DES PLAINES RV	3000	7	17
18	SO. HOLLAND	US 6 159TH ST	SOUTH PARK	U.P.	LITTLE CALUMET RV	5800	13	18
19	OAK FOREST	US 6 159TH ST	IL 50 (CICERO AVE)	NIRC	MIDLOTHIAN CREEK	7000	16	19
20	HILLSIDE	I 290 EISENHOWER EXPY	W. OF WOLF RD	NONE	SEWER	7900	13	20
21	CHICAGO	I 94 DAN RYAN EXPY	72ND ST	NONE	SEWER	32000	71	21
22	CHICAGO	I 90 / 94 KENNEDY EXPY	FULTON AVE	C & NW, SOO & CR	SEWER	60000	134	22
23	CHICAGO	I 90 / 94 KENNEDY EXPY	ROSCOE ST	NONE	SEWER	72000	160	23
24	ROSEMONT	I 190 KENNEDY EXPY	E. OF MANNHEIM RD	WIS. CENTRAL	DES PLS RV & WLRS CK	111000	247	24
25	BRIDGEVIEW	US 12 / 20 95TH ST	IL 43 (HARLEM AVE)	BRC	STONE CREEK	37200	83	25
26	CHICAGO	I 90 / 94 DAN RYAN EXPY	ROOSEVELT RD	NONE	SB CHICAGO RIVER	70000	156	26
27	CHICAGO	I 94 CALUMET EXPY	110TH ST	NONE	LAKE CALUMET	240000	535	27
28	CICERO	IL 50 CICERO AVE	US 34 (OGDEN AVE)	BURLINGTON N	SEWER	31800	71	28
29	CHICAGO	I 90 / 94 DAN RYAN EXPY	WALLACE ST	NONE	SO. BR CHICAGO RV	108000	241	29
30	CHICAGO	I 55 STEVENSON EXPY	HOMAN AVE	ATSP	SAN. SHIP CANAL	40000	89	30
31	OAKLAWN	111TH ST.	CENTRAL	B&O RR		7400	16.5	31
32	MELROSE PK	IL 64 NORTH AVE	1ST AVE	SOO LINE	DES PLAINES RV	9600	21	32
33	PROSPECT HTS	PALATINE RD	MILWAUKEE AVE	NONE	DES PLAINES RV	64000	143	33
34	ELMHURST	I 290 EISENHOWER EXPY	EMROY AVE	NONE	SEWER TO DOYLE RES.	11000	25	34
35	BLUE ISLAND	I 57	127TH ST	NONE	CAL SAG CHANNEL	112500	251	35
36	TINLEY PK	IL 43 HARLEM AVE	176TH STREET	NIRC	DITCH	22500	50	36
37	LAKE BLUFF	US 41 SKOKIE HWY	IL 176 (ROCKLAND RD)	NONE	SKOKIE RV	6000	13	37
38	LAKE FOREST	US 41 SKOKIE HWY	DEERPATH AVE	NONE	SKOKIE RV	5000	11	38
39	LAKE FOREST	IL 60	W. OF IL 41	SOO LINE	36" SS N.BR.CHI.RV.	6000	13	39
40	MUNDELEIN	US 45 LAKE AVE	N. OF IL 60	EJ & E	SEWER	2400	5	40
41	KNOLLWOOD	US 41 SKOKIE HWY	N. OF IL 176	EJ & E	SKOKIE RV	6000	13	41
42	HAMPSHIRE	IL 47	IL 72	SOO LINE	SEWER TO DITCH	3000	7	42
43	GURNEE	US 41 SKOKIE HWY	N. OF IL 132	SOO LINE	DES PLAINES RV	6000	13	43
44	ELMHURST	IL 83 KINGERY HWY	SO. OF NORTH AVE	ICG & C & NW	SALT CREEK	5000	11	44
45		Reserved for Future						45
46	HIGHLAND PK	US 41 SKOKIE HWY	CLAVEY RD	NONE	E. SKOKIE DR NG. DITCH	7600	17	46
47	NAPERVILLE	IL 59	NORTH AURORA AVE	BURLINGTON N	SEWER TO DITCH	4000	9	47
48	WARRENVILLE	IL 56 BUTTERFIELD RD	W. OF IL 59	E J & E	FERRY CREEK	5800	13	48
49		Reserved for Future						49
50	HIGHLAND PK	IL 22 HALF DAY RD	US 41	UNION PACIFIC	E. SKOKIE DRNG. DITCH	4800	11	50
51	ALSIP	127TH ST	E. OF CRAWFORD	CSX	STONY CREEK	6800	15	51
52	PLAINFIELD	IL59	IL 126	E.J. & E. RR				52

Table P-2a: Pump Station Construction History & Reference Notes

PS NO	INSTALL/MO DATE	NOTE REF. NO.	STATION TYPE	SECONDARY SERVICE	PUMP CONTROL			ALARM TYPES		CAP METER	PS NO
					PRIMARY	SEC(1)	TERTIARY	AEGIS	SCADA		
1											1
2	1951/72/95	3,5,8,9,23	WET PIT	2ES FAT	LIQ. V	FLOATS		AEGIS	SCADA		2
3	1951/72/95	3,5,8,9,23	WET PIT	2ES FAT	CL 5000	FLOATS		AEGIS	SCADA		3
4	1951/71	2,3,7,8,10,22	WET PIT	2ES SBAT	LIQ. V	BUBBLER	PROBES	AEGIS	SCADA	YES	4
5	1965/2005	2,7,8,10,22	WET PIT	2ES SBAT	CL 5000	FLOAT	PROBES	AEGIS	SCADA	YES	5
6											6
7	1955	8,9	WET PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA	YES	7
8	1928/87/88	22,25,13	WET PIT	-	LIQ. V	FLOAT		AEGIS	SCADA		8
9	1977	1,3,7,11,23,24	DRY PIT	GEN(D)	CL5000	FLOAT		AEGIS	SCADA	YES	9
10	1990	3,5,9,23	DRY PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA	YES	10
11	1934	5,11,24,25	DRY PIT	GEN (D)	LIQ. V	FLOAT		AEGIS	SCADA		11
12	1934/72	9,20	DRY PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA		12
13	1934	5,9,24,25	DRY PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA		13
14	1934/72	20,22,25	DRY PIT	-	LIQ. V	FLOAT		AEGIS	SCADA		14
15	1940	11(P),24	DRY PIT	-	LIQ. V	FLOAT		AEGIS	SCADA		15
16	1934	5,9,20	DRY PIT	2ES FAT(P)	LIQ. V	FLOAT		AEGIS	SCADA		16
17	1931/91	3,5,9,23,24	WET PIT	2ES FAT	LIQ. IV	FLOAT		AEGIS	SCADA	YES	17
18	1942	24,25	DRY PIT	GEN (D)	LIQ. V	FLOAT		AEGIS	SCADA		18
19	1948	11(P),24,25	DRY PIT	GEN (D)	LIQ. V	FLOAT		AEGIS	SCADA		19
20	1958/86	5,8,9,24	WET PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA		20
21	1960	7,8,9,15,22,25	WET PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA		21
22	1970/96	2,3,5,8,12,23	WET PIT	2ES SBFAT	LIQ. V	FLOAT		AEGIS	SCADA		22
23	1970/96	2,3,5,8,12,23	WET PIT	2ES SBFAT	LIQ. V	FLOAT		AEGIS	SCADA	YES	23
24	1960/70	3,7,8,19,22	WET PIT	2ES FAT	LIQ V	BBL/ELCT	PROBES	AEGIS	SCADA	YES	24
25	1962	3,7,9	WET PIT	2ES FAT	LIQ. V	BUBBLER	PROBES	AEGIS	SCADA	YES	25
26	1962/72	2,3,7,8,19,22	WET PIT	2ES SBFAT	LIQ. V	FLOATS		AEGIS	SCADA	YES	26
27	1961	3,7,8,9,19,22	WET PIT	2ES FAT	LIQ. V	BUBBLER	PROBES	AEGIS	SCADA	YES	27
28	1961	2,3,5,11,16,23	WET PIT	GEN(D)	LIQ. V	FLOATS		AEGIS	SCADA	YES	28
29	1962	7,8,10	WET PIT	2ES SBAT	LIQ. V	BUBBLER	PROBES	AEGIS	SCADA	YES	29
30	1963	3,5,8,9,16,22	WET PIT	2ES FAT	LIQ. V	FLOATS		AEGIS	SCADA		30
31	1999	3,5,16,28	WET PIT	2ES FAT	CL 5000	FLOATS		AEGIS	SCADA	YES	31
32	1963	9	DRY PIT	2ES FAT	CL 5000	FLOATS		AEGIS	SCADA		32
33	1975	3,9,33	WET PIT	2ES FAT	LIQ. V	BUBBLER	PROBES	AEGIS	SCADA	YES	33
34	1961/90	3,5,8,11,23,24	DRY PIT	GEN(D)	CL 5000	FLOAT		AEGIS	SCADA	YES	34
35	1967	2,3,8,9,12	WET PIT	2ES FAT	LIQ. V	FLOATS		AEGIS	SCADA	YES	35
36	1972	1,18,23	DRY PIT	GEN(D)	LIQ. V	FLOATS		AEGIS	SCADA		36
37	1937	9,22,24,25	DRY PIT	2ES FAT	LIQ. V	FLOAT		AEGIS	SCADA		37
38	1937	24	DRY PIT	-	LIQ. V	FLOAT		AEGIS	SCADA		38
39	1990	3,5,11,23,24	WET PIT	GEN(D)	CL 5000	FLOAT		AEGIS	SCADA	YES	39
40	1985	3,9,23	WET PIT	2ES FAT	LIQ. V	FLOAT	PROBES	AEGIS	SCADA	YES	40
41	1937	22,24,25	DRY PIT	GEN(D)	CL 5000	FLOAT		AEGIS	SCADA		41
42	1935/86/87/95	5,11,12,23	WET PIT	GEN(D)	LIQ. V	FLOAT		AEGIS	SCADA	YES	42
43	1936	3,5,9,15,23	DRY PIT	-	LIQ. V	FLOAT		AEGIS	SCADA		43
44	1938/00	5,16,23,24	DRY PIT	2ES FAT	LIQ. V	FLOATS		AEGIS	SCADA	YES	44
45											45
46	1993	2,3,5,9,23	WET PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA	YES	46
47	1955/86	5,11	WET PIT	GEN(D)	LIQ. V	FLOAT		AEGIS	SCADA		47
48	1942	24,25	DRY PIT	-	LIQ. V	FLOAT		AEGIS	SCADA		48
49											49
50	1985	3,9,23	DRY PIT	2ES FAT	LIQ. V	BUBBLER	FLOAT	AEGIS	SCADA	YES	50
51	1984	3,9,23	DRY PIT	2ES FAT	LIQ. V	BUBBLER	FLOAT	AEGIS	SCADA	YES	51
52	2002	16,9	WET PIT	2ES FAT	LIQ V	FLOAT		AEGIS	SCADA		52

Pumping Station Construction History & Reference Notes

- 1
- 2 PUMPING STATION # 4(2), 5, 21, 22, 23, 26, 28, & 35(2)AND 46 HAVE AUTOMATIC TRASH RACKS
- 3 PUMPING STATIONS # 2, 3, 4, 5, 9, 10, 17, 21, 22, 23, 24, 25, 26, 27,28, 30, 31, 33, 34, 35, 39, 40, 41, 43, 44, 46, 50 & 51 HAVE WATER RECIRCULATING SYSTEMS
- 4 ALL PUMPING STATIONS HAVE AEGIS ALARM TRANSMITTERS
- 5 INSTALLATION OF NEW PUMPS, ELECTRICAL CONTROLS AND BLDG RENOVATION# 2,3,9,10,11,13,16,17,18,20,22,23,28,31,34, 36, 39,42,46
- 7 PUMP STATIONS HAVING STAND-BY COMPRESSED AIR TANKS FOR BUBBLER CONTROL ARE: 4,24,25,26,27,29,33,35
- 8 EXPRESSWAY PUMPING STATIONS: TOTAL 18 I-55(30) I-57(35) I-80(1,6) I-290(4,5,7,20,34) Bishop Ford(27) DAN RYAN(21,26,29) EDENS(2,3) KENNEDY(22,23,24)
- 9 TWO ELECTRIC SERVICES FULL AUTOMATIC TRANS. (2ES FAT) STATIONS ARE: 2,3,5,7,10,12,13,16,17,20,21,22,23,24,25, 27,30,31,32,33,35,37,40,43,44,46,50,51,52
- 10 TWO ELECTRIC SERVICE SPLIT BUS AUTOMATIC TRANSFER (2ES SBAT) STATIONS ARE: 4,29
- 11 STAND-BY GENERATOR, NG=NATURAL GAS, D=DIESEL
PUMP STATION NUMBERS: 9(D), 11(D),15, 18 (D), 19, 28(D), 34(D), 36(D), 39(D), 41(D), 42(D), 47(D) AND TWO (2) MOBILE GENERATORS 31(D), 46(D)
- 12 MAIN TIE MAIN SCHEME 22,23,26 & 35
- 13 PS8: Access is limited and requires lane closure for preventive maintenance and other routine maintenance items.
- 14
- 15 PUMPING STATIONS PROGRAMMED FOR CONSTRUCTION 14, 48, 38, 8, 25, 27, 26, 4, 7, 24, 33
- 16 PUMP STATIONS UNDER CONSTRUCTION PS 24, 26, 27,
- 17 Pump Station 2 and 3 have two additional low flow pumps each.
- 18 PUMP STATIONS THAT HAVE INTERCHANGEABLE LOW FLOW PUMPS ARE PS 5 AND PS 21
- 19 WATER RECIRCULATION IS POSSIBLE, BUT CURRENTLY NOT USABLE AT THE FOLLOWING STATIONS: 24,26,27,33
- 20 PS12, 14 HAVE COMMON DISCHARGE
- 21
- 22 THE FOLLOWING PUMPING STATIONS ARE UNDER IMPROVEMENT PROGRAM; 4,8,14,24,26,27,48
- 23 PUMP STATIONS THAT HAVE A STANDBY PUMP: 2,3,5,9,10,21,22,23,28,30,31,34,35,36,39,40,41,42,43,44,46,50, 51 & 52
- 24 PUMP STATIONS HAVE INTERCHANGEABLE PUMPS: 11,15,18,19,20,31,37,38,39,41,44,48 BUT DIFFERENT IMPELLER SIZES/VOLTAGE
- 25 PUMP STATIONS ON A MULTI-YEAR IMPROVEMENT SCHEDULE BUT NOT PROGRAMMED: ,9,11,12,13,15,16,18,19,20,24,29,32,33,35,36,37
- 26 PUMP STATIONS WITH INTERCHANGEABLE PUMPS : 9, 13, 17, 31, 34 BUT DIFFERENT IMPELLER SIZE/VOLTAGE

GENERAL ABBREVIATION CODES
P OR (P)..... PROPOSED

PUMP COMPANY ABBREVIATIONS	PUMP REBUILD HISTORY CODES	PUMP TYPE CODES
AB..... ABS PUMP CO.	N..... NEW PUMP	VA..... VERTICAL AXIAL
AC..... ALLIS CHALMERS	R..... REBUILT PUMP	S..... SUBMERSIBLE
AV..... AURORA PUMP CO.	O..... ORIGINAL	SVD..... SIDE VOLUTE DISCHARGE
CA..... CASCADE PUMP CO.	RWK..... REWORK	DPS..... DRY PIT SUBMERSIBLE
CO..... CORNELL MFG. CO.	NS..... NEW SPARE BOWL	* LOW FLOW PUMP
CP..... CHICAGO PUMP	RS..... REBUILT SPARE	
FL..... FLYGT PUMP CO.	J..... JUNK	
FM..... FAIRBANKS MORSE CO.		
JP..... JOHNSTON PUMP CO.		
PA..... PATTERSON		
PE..... PEERLESS PUMP CO.		
CY..... CLOW YEOMANS		
SC..... SCAN PUMP CO.		
EB..... EBARA PUMP CO.		

TABLE P-3 PUMP SPECIFICATIONS

MAIN PUMPS							LOW FLOW PUMPS							
PS	MAIN	STANDBY	PUMP	PUMP	DSCH	MOTOR/ENG	CURRENT	LOW FLOW	PUMP	PUMP	DSCHG	MOTOR/ENG	CURRENT	PS

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

		PUMPS				G		(FL)							(FL)	
NO	(QTY)	(GPM)	TYPE	SIZE	SIZE	VLT/PHASE/RP M	(AMPS/HP)	(QTY)	(GPM)	TYPE	SIZE	SIZE	VLT/PHASE/RPM	(AMPS/HP)		
1															1	
2	4	13200	VA	24	24	460/3/892	181/150	1	9200	VA	18	20	460/3/1188	152/125	2	
3	4	17500	VA	30	30	460/3/709	273/200	1	9550	VA	18	20	460/3/1188	120/100	3	
4	9	10000	VA	20	24	480/3/1200	227/200	-	-						4	
5	4	7000	S	20	16	480/3/1165	117/100	1	3000	S	12	12	480/3/875	79/60	5	
6															6	
7	2	3250	VA	12	14	208/3/1165	70/25	-	-						7	
8	2	1500	S	8	8	240/3/890	50/20	-	-						8	
9	4	8000	DPS	16	18	480/3/700	224/175	1	3500	DPS	12	12	480/3/875	160/60	9	
10	3	640	DPS	6	6	460/3/1750	20/14.8	2	290	DPS	4	4	480/3/1750	9/6.4	10	
11	2	2700	DPS	12	12	230/3/860	80/30	-	-						11	
12	2	5500	DPS	14	14	230/3/875	159/60	-	-						12	
13	2	5500	DPS	12	14	230/3/890	160/60	-	-						13	
14	2	5500	SVD	14	14	230/3/875	98/20	-	-						14	
15	2	2750	SVD,DPS	10	12	230/3/860	54/20, 80/30	-	-						15	
16	2	2700	DPS	10	12	480/3/1170	-/25	-	-						16	
17	2	4200	S	14	16	460/3/875	60/60	1	375	S	4	4	480/3/		17	
18	2	2900	DPS	12	12	230/3/870	80/30	-	-						18	
19	2	3500	DPS	10	12	230/3/860	80/30	-	-						19	
20	2	3950	S	12	14	480/3/860	41/30	-	-						20	
21	4	10700	S	-	-	480/3/175	207/175	1	3000	S	10	12	460/3/880	82.5/60	21	
22	5	15000	S	-	30	480/3/1175	230/189	2	2500	S	8	12	480/3/1160	437/54	22	
23	6	14400	S	-	32	480/3/875	196/153	2	2500	S	10	12	480/3/1160	74/52	23	
24	6	17500	VA	24	30	480/3/1175	277/250	1	6000	VA	6	6	480/3/	117/100	24	
25	6	6000	VA	20	24	480/3/1175	49.5/40	1	1200	S	6	10		-/15	25	
26	6	10000	VA	20	20	480/3/1200	138.5/125	1	10000	VA			480/3/1180	140/125	26	
27	8	30000	VA	24	36	480/3/708	386/350	2	2500	S	8	12	460/3/1160	77/60	27	
28	4	8000	DPS		14	460/3/880	90	2	3000	S		12	460/3/1160	/30	28	
29	6	18000	VA	36	30	480/3/705	422/350	2	2700	S	8	12	460/3/1160	92/75	29	
30	3	13300	S	50	20	460/3/885	170	1	2800	S	8	12	460/3/1165	67/50	30	
31	2	3050	S		12	460/3/1180	0/160	2	1300	S		8	460/3/1170	/35	31	
32	2	4800	SVD	14	14	440/3/695	55/40	-	-						32	
33	6	9000	VA	18	20	480/3/1175	140/125	1	10000	VA			480/3/1180	144/125	33	
34	3	5050	DPS	12	16	460/3/1150	81/60	-	2000	DPS	12	12	480/3/1180	34/25	34	
35	5	22500	VA	30.5	36	480/3/700	345/300	1	17500	VA	30.5	36	480/3/700	345/300	35	
36	4	7507	DPS	14	16	480/3/880	129/100	-	-						36	
37	2	3000	DPS	10	12	230/3/860	82/30	-	-						37	
38	2	2500	DPS	10	12	230/3/860	67/25, 82/30	-	-						38	
39	3	2900	S	12	12	460/3/860	41/30	1	840	S	6	6	460/3/1750	20/14.8	39	
40	4	800	S	4	6	480/3/1750	16.1/12	-	-						40	
41	3	3400	DPS	12	12	460/3/860	40/30	-	-						41	
42	3	2500	S	6	6	460/3/1160	24.9/20	1	500	S	4	4	460/3/1160	11.5/7.5	42	
43	3	3000	DPS	12	12	460/3/860	40/30	-	-						43	
44	3	2500	DPS	16	12	460/3/860	41/30	1	350	DPS	6	4	460/3/1800	/7.5	44	
46	3	3800	S	14	14	460/3/885	39.7/30	2	1100	S	6	8	480/3/1750	-/15	46	
47	2	2000	SVD	8	8	460/3/875	37.5/20	-	-						47	
48	2	2900	DPS	12	12	230/3/870	82/30	-	-						48	
50	3	2400	SVD	12	12	480/3/705	50/30	-	-						50	
51	3	3400	SVD	12	12	480/3/885	50.5/40	-	-						51	
52	3	2200	S	12	10	480/3/860	41/30	1	500	S	4	4	480/3/1750	13/10	52	

TABLE P-4: PUMP REBUILD HISTORY

PS NO	POSITION										PS NO	
	1	2	3	4	5	6	7	8	9	10		
2	95(O)	95(O)	95(O)	06(R)	06(R)	*02(O)*	*02(O)*					2
3	95(O)	95(O)	95(O)	95(O)	*95(O)*	*02(O)*	*02(O)*					3
4	7/04(P)	10/01(RS)	7/03(RS)	12/09(R)	9/05(RW)	3/94(N)	10/03 RS	12/03 (R)	4/08(R)			4
5	3/06(R)	3/06(N)	3/06(N)	3/06(N)	3/06(N)	5/10(RW)						5
6												6
7	07/09 (R)	11/88(N)										7
8	6/06(R)	8/99R										8
9	04(O)	04(O)	04(O)	04(O)	*94(O)*							9
10	93(O)	93(O)	93(O)	6/99R	*02(R)							10
11	1/94(N)	96(P)										11
12	12/04 (P)	10/03 (O)										12
13	5/01(R)	5/01(R)										13
14	12/07 (R)	8/08 (N)										14
15	12/06(N)	9/92(N)										15
16	01(N)	01(N)										16
17	93(O)	93(O)	3/10(R)									17
18	9/93(N)	7/04 (R)										18
19	10/90	11/93(N)										19
20	4/00(N)	4/00(N)										20
21	6/04 (N)	6/04 (N)	6/04 (N)	6/04 (N)	* 6/04(N)*							21
22	96(O)	96(O)	96(O)	96(O)	96(O)	*96(O)*	02/04(R)					22
23	96(O)	96(O)	96(O)	96(O)	96(O)	96(O)	1/10 (R)	06(R)				23
24	2/02(NS)	02(R)	1-04 (RW)	7/04(RW)	12/09 (R)	60(O)	*12/93(RS)*					24
25	4/04 (RS)	3/27/52	2/95(RS)	5/93(R)	8/91(N)	5/94(R)	*8/01(R)*					25
26	7/97(N)	05/02 NS	9/91(N)	3/09 (R)	8/00(N)	06(R)	*12/04N*					26
27	12/87(N)	6/94(NS)	10/09 (R)	11/99 (R)	9/95(RS)		12/01(R)	02/(R)	3/05(R)	9/08(R)		27
28	2/01 (N)	2/01 (N)	2/01 (N)	2/01 (N)	2/01 (N)	*2/01 (N)*	*2/01(N)*					28
29	7/97(N)	5/99(N)	06(R)	5/99(N)	3/96(N)	8/93(N)	4/10 N	07/09 N				29
30	8/02 (N)	8/02 (N)	8/02 (N)	8/02 (N)	*8/02 (N)*							30
31	99(O)	99(O)	99(O)	*7/04 (RW)*	7/04(RW)							31
32	3/08(N)	96(N)										32
33	06(N)	75(O)	75(O)	8/86(RS)	6/86(RS)	1/96(N)	3/06(N)					33
34	7/04(RW)	6/10 (N)	6/10 (N)	3/10(R)								34
35	02(NS)	67(O)	67(O)	3/82(S)	67(O)		5/02(NS)					35
36	04 (O)	04 (O)	04 (O)	04 (O)								36
37	10/99	4/92(R)										37
38	08(N)	5/92(N)										38
39	91(O)	7/04 (RW)	91(O)	91(O)								39
40	3/06(N)	06(N)	3/06(N)	9/09 (R)								40
41	10/04 (N)	10/04 (N)	10/04 (N)									41
42	95(O)	10/09(R)	95(O)	*95(O)*								42
43	9/05 (N)	9/05 (N)	9/05 (N)									43
44	11/02(N)	11/02(N)	11/02 (N)	*02 (N)*								44
46	12/90(O)	9/09(R)	12/90(O)	01/02(R)	*90(O)*							46
47	1/94(R)	2/09(R)										47
48	3/10(R)	99 (R)										48
49												49
50	85(O)	85 (O)	85(O)									50
51	07(N)	06(N)	06(N)									51
52	1/08 (RW)	02(O)	02(O)	*02(O)*								52

TABLE P-5 SPARE PUMPS AND PUMP REBUILD PROGRAM

PS NO	MAIN PUMPS		LOW PUMPS		FLOW		OIL-TUBE	2011	PS NO
	NEW	REBUILT	NEW	REBUILT	IMPELLER	ASSEMBLY	PUMP #		
1									1
2			1	1					2
3		1	1						3
4		2							4
5		1		1					5
6									6
7	1								7
8								1P	8
9	1							2,3 & 4P	9
10	1								10
11					1				11
12								2P	12
13									13
14									14
15					1				15
16	1								16
17	1								17
18					1			1P	18
19									19
20								1P	20
21				1				5P	21
22		1			1				22
23		1							23
24				1					24
25									25
26									26
27									27
28			1						28
29	1	2					2	5&6P	29
30	1								30
31				1					31
32		1			1				32
33		1		1	2			6P	33
34									34
35	1								35
36	1								36
37					1			1&2P	37
38									38
39		1							39
40	2							2P	40
41									41
42		1						1&3P	42
43					1				43
44			1						44
45									45
46		1							46
47									47
48									48
49									49
50	1								50
51					1				51
52			1						52

TABLE P-7 WET PIT CLEANING AND ROOF MAINTENANCE RECORD

PS	WP AREA	PREVIOUS	LATEST	INSTALL	SUB	REPLACE	WARRANTY	DATE	PS
----	---------	----------	--------	---------	-----	---------	----------	------	----

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

NO	(SQ FT)	DATE	DATE	DATE	CONTRACT	ROOF	COST	5 YRS	10 YRS	INSPECTED	STATUS	NO
1												1
2	684	10-01	7-02		Boice	(84)			YES	08-12-09	OK	2
3	684	7-01	5-02		Boice	(84)			YES	07-22-09	OK	3
4	1144	6-09	4-10		Arrow	(93)	9775		YES	07-21-09	08(P)	4
5	277	7-01	5-04							08-11-09	OK	5
6												6
7	79		10-03	SLAB						08-11-09	OK	7
8	88	UNK		ORIGINAL						01-04-06	OK	8
9	826	9-01		ORIG(77)	Elgin Roofing	(06)				07-27-09	OK	9
10	970	4-04	7-09							07-22-09	OK	10
11	159		9-07		ERC	(08)			YES	07-31-09	OK	11
12	222	6-08	6-09		ERC	(08)			YES	07-21-09	OK	12
13	223	3-94	6-08			(87)	2070			07-22-09	OK	13
14	182		10-03	ORIGINAL						07-31-09	OK	14
15	143	10-03	08B		Acer	(90)	1395		YES	07-29-09	OK	15
16	156		UNK		Acer	(90)	1395		YES	07-27-09	OK	16
17	88	88(R)	08B							07-22-09	OK	17
18	212	8-00	6-08		Riddiford	(97)	5,197		20yr-yes	07-31-09	OK	18
19	200	8-00	9-07		Elgin Roofing	(05)				07-31-09	OK	19
20	265	4-04	4-10		38630	(86)				07-24-09	OK	20
21	787	8-07	2-09		7 K'S	(89)	8484		YES	07-29-09	OK	21
22	478	UNK	10-01		Pinnacle	(87)	5190		YES	08-11-09	OK	22
23	1114		10-01	ORIGINAL						08-12-09	OK	23
24	639	8-01	3-10		Elgin Roofing	12-08	23,240		YES	07-27-09	08(P)	24
25	956	11-99	7-09	ORIGINAL						07-29-09	OK	25
26	432	6-08	1-10		Riddiford	(97)	21,560		20yr-yes	08-11-09	OK	26
27	1984	9-07	1-09		Steward	3-10	10,290		YES	03-10	PA	27
28	1692	8-01	4-04	ORIGINAL						07-27-09	OK	28
29	1223	7-08	7-09		Riddiford	(97)	30,443		20yr-yes	08-11-09	OK	29
30	809	7-08	1-10	ORIGINAL	Arrow	(93)				07-27-09	OK	30
31	738									07-29-09	OK	31
32	280	10-05	9-07	ORIGINAL						07-21-09	OK	32
33	1039	08B	1-10		Riddiford	(97)	22,374		20yr-yes	08-12-09	OK	33
34	163	86A	9-01							07-21-09	OK	34
35	2002	4-02	2-09		Steward	3-10	8067		YES	03-10	PA	35
36	573	9-01	4-04		Elgin Roofing	(05)				07-31-09	OK	36
37	253	4-04	08B	ORIGINAL							10P	37
38	198	10-88	4-04	ORIGINAL						05-10-06	OK	38
39	436	5-04	1-10							08-13-09	OK	39
40	1868		10-01							08-13-09	OK	40
41	231		3-02		Acer	(90)	1854		YES	08-13-09		41
42	144	8-00	9-09	SLAB						08-14-09	OK	42
43	242	3-02	4-10		Acer	(90)	1395		YES	08-13-09		43
44	204	11-05	11-08	ORIGINAL						07-24-09	OK	44
45												45
46	793									08-12-09	OK	46
47	88		11-88(R)		Elgin Roofing	(05)			YES	08-14-09	OK	47
48	216		8-00		CSR	(96)				08-14-09	OK	48
49		UNK		SLAB								49
50	624	UNK								08-12-09	OK	50
51	327	4-04	1-10							07-29-09	OK	51
52	443		9-09							08-14-09	OK	52

ARTICLE 9.0 – SURVEILLANCE AND DYNAMIC MESSAGE SIGN SYSTEM

9.1 SURVEILLANCE AND DYNAMIC MESSAGE SIGN SYSTEM DESCRIPTION

9.1.1 SURVEILLANCE EQUIPMENT

The Surveillance System consists of all devices and appurtenances used for roadway surveillance, Advanced Traffic Management System (ATMS), driver information and ramp metering, control cabinets, load relays, foundations, power services including stand by engine and generator with battery storage units, monitoring and alarm systems, ventilation and cooling systems, switch gear, solar panels, piezo sensors, flashing beacons, inductance loops, 2070 lite controllers, microwave vehicle detectors, micro loops, digital and analog inductance loop detectors shelf and rack mounted, telemetry tone racks, video matrix switches, communication protocol converters, all interconnecting cables, and wooden posts owned or maintained by the State of Illinois and under the jurisdiction of the Department. Specifically included are all FSK tone telemetry power supplies, transmitters, modems, and receivers. A list of the Surveillance Systems locations is available in Section 3.

9.1.2 DMS SYSTEM EQUIPMENT

The Dynamic Message Sign (DMS) system is comprised of Amber LED, color LED, and fiber flip disk, message signs, cameras, control cabinets, 360 Surveillance's Cameleon system for managing signs and cameras and other appurtenances on the various expressways throughout District 1, and video monitors and other control components and appurtenances as located in the Traffic Systems Center (TSC) in Oak Park, Illinois, and at the IDOT ComCenter at the District 1 headquarters in Schaumburg, Illinois. A list of the DMS locations is available in Section 3.

9.1.3 DMS FIELD LOCATIONS

Specific equipment at field locations includes:

Eleven (11) Tele-Spot 18-inch 3 line, line matrix fiber reflective flip disk fiber optic illuminated display and enclosures (including fans and filters), intercabling structural support and service walkway, Tele-Spot sign controller including firmware (software) and enclosure, quartz halogen lamps; seventeen (17) Skyline full matrix LED illuminated DMS w/2070L Controllers, six (6) Skyline full matrix LED illuminated DMS w/170 controllers, structural support and service walkways, heaters, filters, intercabling, fans; six (6) Daktronics full matrix color LED front access DMS, structural support and service walkways, fans, heaters, intercabling, display and enclosure control cabinets and remote access control panels, fifteen (15) Adaptive DMS 8, 10, or 12-inch full matrix LED illuminated DMS front access lift door, structural support, NTCIP controllers, heaters, filters, intercabling, fans, modems, utilities services (includes all taps, terminations, conduit and cabling interconnect), handholes, above ground splice boxes, meter cabinets, electrical heater and thermostat, control cabinet housing equipment and other appurtenances, 55 signs and 54 structural supports

9.1.4 TRAFFIC SYSTEMS CENTER

Specific equipment at the Traffic Systems Center includes:

One (1) Tele-Spot, 3 line, reflective flip disk, line matrix display, and all cabling, one (1) Tele-Spot 1 line, portable 18 inch, 1 module, fiber reflective display and all cabling, sign controller including firmware (software), multiple output regulated DC power supplies including fans and filters, Daktronics Sign Emulator, 360 Surveillance Camelon server, 4 workstations, each with dual 18" LCD monitors, DMS drivers, Tele-Spot drivers, NTCIP drivers, and Skyline drivers, and video drivers, 202 sign modems and sign fiber modems (RS232 and Ethernet).

The video monitoring system as specified herein shall be a complete and operational system. The system shall include, cameras, pan and tilt drives, command receivers/drivers, system control panels, video monitors, power, controls, video cables, modems, and telephone line conduit installation and other appurtenances.

ATMS Maintenance and Support

ATMS is used to control ramp metering, provide travel/congestion times, manage incidents/events and manage DMS and amber alerts after completion. Its hardware includes VMIC data acquisition equipment for ramp metering, vehicle detector stations and other field

device inputs and outputs; one Christy FRC 5000 video wall controller, two PC based work stations, in addition to Sun servers and workstation equipment. The application was developed by Delcan Systems, Schaumburg, IL. The system details will be furnished upon request at the Pre-Bid meeting.

The routine maintenance for ATMS includes preventive maintenance, periodical inspections, at least once per month, response and investigation of trouble calls/deficiencies/abnormalities; replacement of lamps and other periodical maintenance, as specified in Article 11, ComCenter Equipment, in the Christie display system; and replacement of other miscellaneous items less than \$300 each in value. The routine maintenance shall also include twenty (20) hours per month of approved ATMS vendor work time and shall include system behavior and resource use review, performing backups, checking processes, routine review of the data acquisition equipment and the network, responding to system use questions and aiding and assisting the Department in user and data base management, such as adding, deleting users, adding system detectors, DMS Signs, changes to travel time zones, and resetting user passwords. Routine Maintenance shall also include re-configuring hardware, configuring of new hardware, and interface issues with 3rd party software vendors. The Department has a Sun Spectrum Silver contract with Sun Microsystems for maintenance and support of the Sun equipment and is, therefore, excluded from routine maintenance. The Contractor shall, however, perform troubleshooting investigations, preventive maintenance; identify possible failures of this equipment; if necessary, contact and seek Sun for support for resolution of the problem; and implement the final resolution. Under routine maintenance, the Contractor shall provide a high speed data line (speeds up to 1.544mb/s), between TSC and its ATMS vendor, for remote access to ATMS to perform the required work, as defined herein.

Unused routine maintenance man hours shall be tracked and submitted to the Engineer as required for the monthly routine work submittal book. Unused hours can be used for ATMS system enhancements such as generating annual reports, or Input/Output detector data flow reports as part of non-routine authorizations or returned to the Department as a credit against routine maintenance payment.

Software Vendor Qualifications

Minimum requirements for the entity or entities include an existing business presence within District 1, 24/7 on-call service capability, on-line monitoring and intervention capabilities, experience in programming using the existing software, qualified ongoing experience with hardware of the type installed, and qualified ongoing experience with software of the type installed. At the Pre-Construction meeting, the contractor shall submit for approval, to the engineer, a qualified vendor to perform systems support and maintenance of the ATMS. The vendor shall meet the following requirements:

1. Have experience in a data acquisition system, specifically synchronized VMIC front end processors.
2. Have experience in coordination control of three Sun Enterprise 3500 servers networked to process, control, and archive data from the data acquisition system, within and outside IDOT for traffic management control information dissemination and analytical functions; in an environment similar to that of TSC.
3. Have experience in the software environment, similar to that of TSC.
4. Have 5 continuous years of maintenance and support of similar systems in size, and scope, in the Sun Solaris environment.

The vendor shall submit, to the Engineer, resumes of the qualified personnel listed to work on the ATMS. Resumes shall list previous projects and specific duties/responsibilities the individual were responsible for as part of the project. The vendor shall list his previous projects, which involved the Sun Solaris software environment. The list shall include the projects contact person, organization, title, and current phone or e-mail information. The resumes shall be submitted at the Pre-Construction meeting.

The Contractor and his ATMS vendor, when applicable, shall provide on-call support with a two-hour response during off business hours, weekends and holidays. The Contractor shall provide the following on-call support:

1. Traffic Systems Center (TSC) personnel or the Contractor personnel shall initiate a System Problem Ticket , (SPT), for the EMCMS, whenever problems are discovered.
2. The Contractor or the ATMS vendor, if applicable, shall respond within the required response time. When applicable and approved by the Engineer, a telephone response from the vendor's technical staff may suffice to meet the response requirement.
3. If the support and resolution requires less than 4 hours of the ATMS vendor's technician's time, he shall perform the work in a timely manner and verbally inform TSC of the required work.
4. If the support and resolution requires more than 4 hours of the ATMS vendor's technician's time, the Contractor shall follow and document according to the following guidelines:
 - a. All actions taken by the vendor shall be documented on a general billing log, identified by the SPT
 - b. SPT will include the date, time, workstation, and username at the time of the occurrence, description of the observed details, and screen print when applicable.
 - c. The SPTs will be submitted to the vendor, via the Contractor, on Friday, each week, or as needed if deemed an emergency by TSC. The Contractor or vendor shall have until the following Friday to respond to the SPT, except in an emergency, in which case the 1-hour response during normal business hours and 4-hour response during off-peak, weekend, or holiday hours will hold. In cases where extensive research is needed to resolve application problems, the vendor will be allowed 4 man-hours per SPT without additional approval to research/determine the response to the Engineer.
5. The vendor response shall include a detailed description of work required to resolve the SPT or complete the improvement, and number of hours required to complete the task.
6. The Engineer will review and approve/deny/choose to negotiate the description of work and man-hours to complete. Work shall not continue without Engineer's approval.
7. The Contractor shall provide documentation, in the monthly routine work submittal book, of vendor work time, both routine and non-routine work, and a ticket summary for the month. Approved non-routine work shall be paid monthly, through an agreed price authorization, or vendor authorization, from budget allowance Pay Item SV02.

360 Cameleon DMS Control System

The Cameleon DMS Control System is used to manage the District One DMS signs. 360 Surveillance, Inc. and ICX is our DMS System Software provider.

Currently the Department has a premium software Assurance software package with 360 Surveillance which covers Tech support, free upgrades to Core software and drivers during the contract period. The current software assurance package is set to expire in August 2011. The Contractor shall extend this coverage until Feb. 2012. If the option is exercised for an additional year of EMC maintenance, then the Contractor shall secure a Premium Software Assurance Software coverage to take the District DMS Control System into Feb. 2013.

The Cameleon DMS Hardware consists of 2 windows servers (Primary and Backup), and 5 client work stations (4 at TSC, 1 at Com Center). The Contractor shall be responsible for the maintenance of the windows machines, including displays for the duration of the contract.

9.1.5 IDOT COMCENTER

Specific equipment at the ComCenter (remote facility):

360 Surveillance Cameleon workstation, 18" LCD monitors and Ethernet interconnect cabling.

9.1.6 GENERAL MAINTENANCE RESPONSIBILITIES

All items as listed in the system descriptions above shall be maintained under routine maintenance, unless otherwise stated herein.

Damaged parts, material, or other equipment from field installations, which is salvageable, may be repaired by the Contractor and may be reused in the system upon approval by the Engineer.

Refer also to Article 9.7 Special Inventory Requirements.

For other General Maintenance responsibilities refer to Article 4.0.

9.2 RESPONSE AND REPAIR TIME REQUIREMENTS

Article 4.0 discusses general response requirements of routine maintenance. The following chart lists the maximum response, service restoration, and permanent repair time the Contractor will be allowed to perform corrective action on specific surveillance system equipment before liquidated damages are assessed. (For response and repair time documentation requirements (tickets) review Article 4.0).

Incident or Problem	Response Time	Service Restoration Time	Permanent Repair Time
Ramp Metering Malfunction or Damage	1 hour	4 hours *	24 hours
Cabinet Motorist Caused Damage	1 hour	48 hours	**
DMS Malfunction or Damage	1 hour	8 hours	10 days
Inoperable Loop Detector Unit	1 hour	4 hours	10 days
Repair/Replace Induction Loop (Non-Metering Location)	1 hour	48 hours	14 days
Repair of Power Supplies, Telemetry, etc.	1 hour	4 hours	14 days
Repair/Replace 2070 Lite Controller DMS/Ramp Meter/Detector Cabinet	1 hour	4 hours	30 days
Cable Repairs (Temp Cable Needed)	1 hour	24 hours	21 days
Inoperable Microloop	1 hour	4 hours	14 days
Inoperable Microwave Vehicle Detector	1 hour	4 hours	14 days
Conduit Repairs	1 hour	24 hours	21 days

*In case of ramp metering cabinet knockdowns, service restoration of all component parts affecting the ramp metering operation shall be completed within four (4) hours or by the next ramp metering control period, whichever is first.

** Dependent upon availability of new control cabinet

9.3 **SPECIFIC MAINTENANCE RESPONSIBILITIES**

Cable Locates

The Surveillance/DMS patrolmen or Specialist shall normally perform all cable locates for the Surveillance and DMS Systems.

Ramp Control Signal Head, Post Mounted, One Face

The Contractor shall maintain a traffic signal head, a traffic signal post and foundation. The traffic control signal head shall consist of one (1) face and two (2) signal sections (incandescent or LED).

Flashing Beacon Signal, Low Mounted, 2 Signal Sections

The Contractor shall maintain a low mounted flashing beacon (incandescent or LED) and module, and all appurtenances, mounted on a wood pole.

Ramp Metering Control Cabinet and All Components

The Contractor shall maintain an expressway ramp metering control cabinet, foundation, load relay, telemetry mounting frame, and all other appurtenances including the telemetry power supply, transmitters and receivers.

Ramp Metering Control Cabinet with P.I.M.S. and All Components

The Contractor shall maintain an expressway ramp metering control cabinet, foundation, load relay, telemetry mounting frame, a CB radio, CB antenna, a 4" PVC duct to hide and mount the CB antenna, a 12 volt power supply, a dial-up telephone circuit, and all other appurtenances including the telemetry power supply, transmitters and receivers.

Ramp Meter Control Cabinet, Type 334

The Contractor shall maintain an expressway ramp metering control cabinet Type 334 with Type I foundation, PDA, solid state flasher cube, load relay, detector input file, and all other appurtenances located or attached to the ramp meter cabinet Type 334 location.

Surveillance Cabinet and All Components

The Contractor shall maintain a surveillance, cabinet post and base, foundation, telemetry mounting frame, where applicable, including the telemetry power supply, and transmitters/receivers

Surveillance Cabinet with P.I.M.S. and All Components

The Contractor shall maintain a surveillance cabinet, cabinet post and base, foundation, telemetry mounting frame, where applicable, a CB radio, CB antenna, a 4" PVC duct to hide and mount the CB antenna, a 12 volt power supply and a dial-up telephone circuit, and the telemetry power supply, transmitters and receivers.

Surveillance Cabinet and all Components, Type 334

The Contractor shall maintain a Type 334 surveillance cabinet on Type I foundation, PDA, detector input file and all other appurtenances located in or attached to the surveillance cabinet Type 334.

Ramp Metering Loop Detector Wire, Sensor Unit and All Components

The Contractor shall maintain an in-road loop wire either embedded in a sawed slot in the roadway pavement or embedded in the concrete pavement (pre-formed loops), a loop detector sensor unit, vehicle loop detector amplifier or active channel encased in a durable housing within the Ramp Metering Control Cabinet.

Expressway Loop Detector Wire, Sensor Unit, and All Components

The Contractor shall maintain an in-road loop wire either embedded in a sawed slot in the roadway pavement or embedded in the concrete pavement (pre-formed loops), an expressway loop detector, vehicle loop detector amplifier or active channel encased in a durable housing

within the Detector Cabinet. These detectors shall be located on expressway mainlines, exit ramps and uncontrolled entrance ramps.

Inoperable Induction Loop, Microloop, or Microwave Detector Procedures

If an inoperable induction loop, microloop, or microwave detector is found on patrol (or discovered via Dispatched Incident), the Surveillance/DMS patrolman shall retune the detector or immediately replace the loop detector with a spare detector from the EMC Spare Parts Inventory or IDOT State Stock.

If it is found that the loop detectors (original and spares) are still inoperable, the Contractor shall immediately start an analysis of the induction loop wire and lead-in and report findings to the IDOT TSC Manager. All information shall be recorded on a ticket.

Analysis of Induction Loop Wire and Lead-in

Before each analysis the patrolmen shall calibrate and date the megger and loop tester and then follow these instructions for the induction loop wire and lead-in:

- Measure a minimum of 100 megohms (above ground under any weather or moisture conditions) when tested with a major megger.
- Have a resistance not greater than five (5) ohms when measured with a loop tester in a continuity test.
- Have an inductance between 50 and 1000 microhenries when tested with the loop tester.

No installation shall be left inoperable because a detector has been removed. The Traffic Systems Center's original detector shall be repaired (or replaced with new) and returned to the original installation within 10 working days.

Both the IDOT original equipment number and the EMC spare part equipment number shall be recorded on the ticket, as well as the other pertinent information concerning the replacement of an inoperable loop detector.

The ticket shall not be cleared until original equipment has been re-installed.

Analysis of Microloop Sensors

Before each analysis the patrolman shall calibrate and date the megger, loop tester and volt/ohm meter, then follow these instructions for the microloop, microloop lead-in and microloop homerun cable:

- The microloop probe inductance shall be between 50 μ H and 80 μ H
- The inductance of lead-in cable shall be 16.5 μ H per 100 feet
- The inductance of the homerun cable shall be 23 μ H per 100 feet
- The total inductance shall be the sum of probe, lead-in and homerun cable calculated \pm 20 percent
- The measured DC resistance shall be the sum of the probe, lead-in and homerun cable calculated \pm 20 percent
- Probe resistance shall be 1.5 ohms
- Lead-in cable resistance 3.0 ohms per 100 feet
- Homerun cable resistance shall be 2.0 ohms per 100 feet.
- The patrolman can use a properly calibrated functioning matched vehicle detector to measure the change in inductance of the sensor when a standard mid-size vehicle is driven directly over the sensor
- The measured change in inductance for a standard mid-size vehicle shall be in the range from 120 Nh to 1200 Nh.
- If it is found a microloop is inoperable, a repair ticket shall be started and all pertinent information for the replacement shall be logged and used for ordering a replacement sensor.

Analysis of Microwave Vehicle Detectors

The microwave vehicle detector shall be remotely interrogated from the detector cabinet with a laptop PC loaded with the latest version of the detector's manufacturer's software available and/or a test cable used locally at the detector.

- The Contractor shall verify if it's the detector or communications cable which has failed.
- Each detector shall have a RS 232 serial port available to use the diagnostic program to talk to the detector.
- If it is found that the detector needs to be replaced, a spare state stock detector shall be used to replace the defective unit until the defective unit can be repaired or replaced.
- If it is found the communication cable is defective, a new cable shall be installed immediately to restore the operations of the detector site.
- A work ticket shall be started and the original equipment shall be repaired and returned to the original locations within 10 working days. Both the original IDOT equipment number and EMC spare part equipment number shall be recorded on the ticket along with all other pertinent information.
- The ticket shall be cleared when the original equipment has been reinstalled.

Count Station/Expressway I/O Validation

The Contractor shall perform manual traffic counts at 20 percent of the Surveillance count Stations in District One or as directed by the Engineer per contract year. The Contractor shall manually count each lane of the count station for a pre-determined one hour duration. The start and end times shall be coordinated with TSC staff. TSC staff shall synchronize the Contractor start and end times based on the ATMS clock used to start and end the hourly data collection sequence. These hourly counts will be used to validate the calculated ATMS volumes collected along the corridor.

TSC staff will analyze the collected data, compare to the calculated ATMS data and issue work tickets where there are discrepancies in the I/O for upstream and down stream detector data.

Induction Loop

Following the analysis of the induction loop by the Specialist and/or TSC inspectors, and it is ascertained by TSC Engineer that damage was not due to State personnel, the Contractor shall replace the loop under routine maintenance.

Traffic Data Collection Station, ATR, With or Without Solar Panels

The Contractor shall maintain an ATR Site solar powered or AC powered data collection with IRD/Pat Traffic TRS Data, recorder, a micro aid 14.4 or 33.6 modem, 18W solar panel, Solex 5.0 regulator, Concord Gpl 24 T battery, and road sensors. At volume sites, one 6 x 6 loop per lane or at classification sites, two 6 x 8 loops per lane with a Class II piezo detector per lane. Control Cabinet, foundation, cabling, and service installation shall be included.

Remote Data Collection Standalone Stations

The Contractor shall maintain radar vehicle detector, solar panels, battery cabinet, cabling, 30 foot aluminum street light pole, and foundation.

Cross Connect Surveillance Cabinets

The Contractor shall maintain an expressway cross connect surveillance cabinet, including a cabinet shell, foundation, telemetry card racks, mounting frame, the telemetry power supply dual line amps, S-666B8-50 terminal blocks, and A.C. duplex outlets.

Surveillance Conduit and Cable

Cable which is damaged shall be removed from the job and new cable installed to replace the existing. The damaged cable shall be replaced to the nearest upstream and downstream cabinet or junction box from which it originates or terminates in. No cable splices will be allowed below ground except for induction loop lead in cable. If an induction loop lead-in cable is damaged it shall be replaced back to the loop dive hole or closest handhole to the loop dive and a new lead-in cable shall be spliced there.

Damage to Unit Duct (Polyethylene conduit)

If unit duct is damaged but cable inside is not damaged, then the Contractor shall make the following repairs:

- A. Install a split corrugated slip duct over the damaged section
- B. Install a wrap around heat shrink tube over the damaged section overlapping each end by three inches minimum to make a water-tight installation

If unit duct is damaged and cable is also damaged, then the Contractor shall make the following repairs:

- A. Remove cable and damaged section of conduit
- B. Replace damaged unit duct with compression couplers (E Loc Coupler) and new unit duct
- C. Install heat shrink over entire repaired area, overlapping repair on each end by three inches minimum to make a water-tight repair

Refer to Article 4.0 for other General Maintenance responsibilities.

9.4 DAILY TICKET REVIEW

The Surveillance/DMS Manager shall review all tickets every work day, edit and/or correct responses, and discuss work activities with the IDOT TSC Manager, prior to the issuance of the Surveillance/DMS Daily Agenda by 8:30 each work day. (Review also Daily Agenda requirements in Article 4.0).

9.5 DMS PATROL REQUIREMENTS

The Surveillance/DMS Patrolmen shall perform a weekly inspection of each Dynamic Message Sign location to assure that each installation and its components are functioning properly. Unless otherwise permitted or requested by the Engineer, except for emergencies, the Contractor is required to schedule the IDOT surveillance patrol routes the first portion of each workday and on the approved route day. Emergency services required by IDOT or other agencies shall be attended to immediately, however, any incomplete daily patrol shall be completed (by the original patrolman or by an approved substitute) during the normal patrol work week. This may require patrols after the normal work day has ended in order to complete the normal patrol work week.

The Engineer shall be notified on a daily basis at the end of the patrol work day of the following:

- List of all incomplete patrols for the day
- Specific reason for each individual incomplete patrols
- Plan as to how Contractor will make-up each incomplete patrols

All repairs not completed at the time of the patrol route inspection must be logged and turned over to Contractor's area supervisor. Repairs not completed at the time of the patrol route inspection are subject to the time limits in Article 10. All Patrol records shall be maintained and submitted to the Engineer weekly.

9.6 DMS SPECIAL INVENTORY REQUIREMENTS

The manufacturer of the IDOT Flip disk Dynamic Message Sign equipment is no longer in business. The replacement parts for this equipment are not readily available. Therefore, the Contractor is required to have any defective boards repaired by qualified service personnel, as approved by the Engineer. The Department maintains a small supply of necessary spare boards in State Stock. The Contractor may use these boards, if available at the time, but must replenish them as soon as possible. The following is a list of approximate quantities of Department owned State Stock available for Contractor use.

Quantity	Item
10	Light Control Master Module
9	Light Control Photocell Module
2	Photocell
13	3901 Controller
2	3201 Controller
2	3201 Distribution Board
2	RS232 Board
10	Light Control Slave Module
16	3901 Column Board
13	3901 Row Board
4	3901 Key Pad
3	4 Wire Modems
6	TS-232 Modem
7	3901-3801 Power Supplies
13	3900 GP/IO Boards
9	Distribution Boards
11	3202 Controller

9.7 STATE STOCK FOR THE SURVEILLANCE SYSTEM

The Department has a limited amount of state stock on hand which may be used by the Contractor, but must be replenished as soon as possible. The TSC Manager shall be notified of any shortages of state stock materials.

Quantity	Item
91	FSK Tone Transmitter
66	FSK Tone Transmitter (mini)
67	FSK Tone Receiver
41	4 Channel Loop Amps
16	2 Channel Loop Amps
12	Type 3 Surveillance Cabinets
5	Type 2 Surveillance Cabinets
2	Type 2 Speed Cabinets
310	Moisture Covers
39	FSK Power Supplies
8	1 Channel Loop Amps

9.8 QUARTERLY REMOTE DATA COLLECTION, STANDALONE STATION INSPECTIONS

The Surveillance/DMS patrolmen shall perform a quarterly patrol inspection of these standalone data collections sites located within District One. There are 7 sites and all are in the S23000 location series of EMCMS location numbers for reference. The patrolmen shall check the alignment of the detector, measure battery voltages, check battery cabinet and that solar panels are tight to the pole, and if the location reports to another remote site/flasher, ensure proper operation of beacons. The Surveillance/DMS patrolmen shall also collect the bin data volume and occupancy and submit the data to the Engineer. The Department uses this data for future projects, ADTs, and for lane closure restrictions.

9.9 SEMI-MONTHLY RAMP METERING CABINET INSPECTION

The Surveillance/DMS patrolmen shall perform a patrol inspection of each Surveillance System Ramp Metering Cabinet location twice per month and provide the following information on Log form S-10:

- Database Location Number
- Expressway Name
- Arrival Time
- Cabinet Number
- Designate Inbound or Outbound
- Inspect Loop Detectors (if applicable)
- Check 2070 lite controller for proper operation (if applicable)
- Check tones for proper operation (if applicable)
- Verify functioning of bulbs, LED's, signal load relays, and flashing beacon controllers
- Telephone TSC for Location Turn-On
- Verify aim of beacon and signal head.
- Beacon head shall face the top of the ramp, the right hand signal facing the metering input loop (Loop 1), and the left hand signal shall face the top of leading edge of the demand loop (Loop 2).
- Replace burnt-out lamps, LED heads, and damaged lenses.
- Inspect cabinet PDA for proper operation (if necessary)
- Check for missing, damaged or loose signs.
- Check cabinet and signal foundation and tighten where necessary.
- Check lubrication of cabinet doors, hinges, and locks.
- Check tuning and operation of loop detectors and/or detector input files.
- Inspect stop bar striping for deficiencies.
- Log follow-up activity needed and telephone the EMC Dispatch Center for ticket number. Before leaving the surveillance installation, the patrolman shall verify the accuracy of the data with TSC. The patrolman shall not leave the location until the Traffic Systems Center's personnel have checked on the accuracy of the data being received at the TSC office.
- Record Departure Time

The EMC Dispatch Center shall be notified to create a ticket noting problems found and/or repairs made.

Log form S-10 shall be delivered to the TSC Manager within 24 hours of completion of work.

9.10 MONTHLY RAMP METERING CLEANING

The Contractor shall wash the ramp control signal head lenses and reflectors, flashing beacons, and signs associated with each ramp metering installation, and clean the inside and outside of the cabinets once per month. The cleaning materials and procedures shall be approved by the TSC Manager prior to starting the work.

Ramp metering cleaning shall be performed during non-peak congestion hours when ramp metering is not in operation controlling traffic. All work shall be noted on the Daily Agenda.

The EMC Dispatch Center shall be notified to create a ticket if problems are found.

9.11 MONTHLY DMS CABINET INSPECTION AND CLEANING

The Surveillance/DMS Patrolmen shall inspect, check and service all parts of the DMS cabinet monthly. Information to be collected includes:

- Database location number
- Expressway name
- Arrival/departure time
- Cabinet number
- ComEd meter number
- ComEd transformer number
- Verify photocell operation
- Verify functioning of fans/heaters; replace or repair if necessary.

- Check cabinet and meter foundation and tighten where necessary.
- Check filters; replace if necessary.
- Inspect/test battery back up units (BBU's) where necessary
- Inspect/test PDA's where necessary
- Check operation of 2070 lite controllers. Verify correct version of firmware loaded in local and remote operations where necessary
- Check operation of 170 controllers. Local and remote modes verify firmware version loaded
- Inspect communications and power cables incoming and outgoing.
- Verify with Control Room Operator at TSC, message correctness and lamp intensities on DMS sign. Replace lamps (as a group, not individually) as needed.
- Check voltage levels of power supplies and battery and adjust where needed.
- Check blank-out functions.
- Check levels on transmit and receive pair in cabinet.
- Check meter housing making sure it is seated properly, and weather-tight. If any problems, coordinate with utility company.
- Check ribbon cables in sign enclosure for worn spots or breaks in the cable/insulation. Verify seating of components and connections. The DMS M.O.S.Y.S. sign are subject to vibrations which cause loose connections and ribbon cable which rest on metal surfaces to become worn and become shorted over a period of time. The contractor shall take immediate corrective action to correct these problems when discovered.
- Check CCTV as required by CCTV manufacturer or as directed by TSC Engineer.
- Trim trees and bushes blocking the line of sight of the DMS display to the motorists. All trimmed branches shall be legally disposed of by the Contractor off the Right-of-Way.

All repairs requiring follow-up should be radioed to the EMC Dispatch Center and a Ticket created. Log form D-1 shall be completed and submitted to the TSC Manager within 24 hours of completion of work. All work activity shall be reported on the Daily Agenda.

The Contractor shall also clean the DMS cabinets, inside and out, once per month, in off-peak rush periods between 9:30 am and 2:00 PM Monday through Friday. The cleaning materials and procedures shall be approved by the TSC Manager prior to starting the work. All work activity shall be reported on the Daily Agenda.

9.12 MONTHLY CCTV INSPECTION

The Surveillance/DMS Manager or Specialist shall perform routine maintenance on the CCTV cameras of DMS, monthly, in accordance with the recommended preventative maintenance schedule provided by the CCTV camera manufacturer. The camera and its lens shall be cleaned as needed, a minimum of three times per calendar year. All work activity shall be reported on the Daily Agenda.

9.13 MONTHLY SIGN ENCLOSURE CLEANING

The Contractor shall hand wash and clean each DMS sign enclosure, inside and/or outside, on a monthly basis, or less frequently as determined by the Engineer, to ensure proper sign functioning. The Engineer/TSC Manager shall approve the cleaning agent and cleaning materials prior to the first cleaning, and shall provide the Contractor with a procedure instruction sheet. All work activity shall be reported on the Daily Agenda.

The Contractor shall contract with a specialty service company, subject to approval by the Engineer, employing a trained and certified closed circuit video service technician in the event of a CCTV failure. Following notification (Ticket entry) of a CCTV failure, the Contractor shall do basic trouble shooting (within four hours of notification) to determine extent of the malfunction. This trouble shooting would entail verification of video out of camera, local control of PTZ at the cabinet location, proper power supply voltages, etc. After consulting with the Engineer, if it is determined that the Contractor cannot adequately repair the problem, the specialty contractor shall be notified to make the repairs.

9.14 YEARLY SURVEILLANCE CABINET INSPECTION AND CLEANING

The Surveillance/DMS patrolmen shall perform an inspection of each surveillance expressway detector cabinet once per calendar year, and record on Log form S-11. Information to be collected or activity required includes:

- Database Location Number
- Expressway Name
- Arrival Time
- Cabinet Number
- Designate Inbound or Outbound
- Inspect Induction Loops
- Inspect electric service disconnect. Note any deficiencies in an advisory report to the TSC Manager.
- Check Tones for proper operation
- Check 2070 lite controllers for proper operation (if necessary)
- Check Cabinet Foundation, tighten where necessary
- Check lubrication of cabinet doors, hinges, and locks
- Clean cabinet inside and out
- Inspect cabinet PDA for proper operation (if necessary)
- Check tuning and operation of loop detectors or detector input files
- Log follow-up activity needed and radio the EMC Dispatch Center to create ticket
- Record/edit cabinet inventories
- Before leaving Surveillance location, patrolman shall call TSC and ask that the accuracy of data be checked. The patrolman shall not leave until the Traffic Systems Center personnel have check on the accuracy of the data being received at the Traffic Systems Center.
- Record departure time

The EMC Dispatch Center shall be notified to create a ticket noting problems found and/or repairs made.

Log form S-11 shall be delivered to the TSC Manager within 24 hours of completion of work.

All Surveillance System cabinets are also to be cleaned once per year. The cleaning materials and procedures shall be approved by the TSC Manager prior to starting the work. All work shall be noted on the Daily Agenda.

9.15 SEMI-ANNUAL FIRE ALARM INSPECTION TSC BUILDING

The Contractor shall schedule an inspection of the TSC Building fire alarm systems. Each inspection shall be scheduled and completed by June 31st and Dec. 31st of each calendar year. The inspection shall be paid for through pay item SI01. If any malfunctioning detection or other system components are found on the inspection, a non-routine work authorization will have to be agreed upon and issued for payment.

9.16 TSC UPS MAINTENANCE

The Contractor shall provide 24 x 7 maintenance and support for the Traffic Systems Center Uninterruptible Power Supply (UPS) Eaton PowerWare, 9390-100, EC515CBB07 with 80 batteries by a qualified UPS System vendor located within District One.

The UPS provides conditioned and uninterruptible AC Power to protect TSC computers, telemetry and LAN as well as the Gateway Servers from surges, spikes, sags and other irregularities which are inherent to commercial utility power.

The Contractor shall provide once per year, an inspection of the UPS module and twice per year an inspection on the battery string. The UPS module shall be inspected by March 1st, along with first battery inspection and second battery inspection by August 1st of that year.

- The Contractor shall provide 24 x 7 Dispatch and technical support.
- 24 x 7 Emergency service.
- Contractor shall be responsible for repair to all components of the UPS System with the exception of the battery units. If any batteries are found to be defective replacement of batteries shall be paid for through pay item SU02.

9.17 YEARLY SIGN SUPPORT INSPECTION

Each July the Contractor shall visually inspect for general safety the condition of each DMS sign support structure and catwalk, including the sign support brackets/bolts which attach the DMS sign box to the sign structure. All work activity shall be reported on the Daily Agenda.

9.18 YEARLY GROUNDING AND ELECTRIC SERVICE UPGRADE

As part of routine maintenance of the Surveillance System, the Contractor shall perform electric service and grounding modifications to a total of five (5) Surveillance System and Dynamic Message System cabinets by October 31 of each contract year, as described herein. Note that the service entrance disconnect is the type used for the Surveillance System, and the distribution extends through one or more surveillance cabinets to complete grounding to all downstream equipment.

The locations to be modified will be designated by the Engineer prior to March 1 of the contract year. The Contractor shall include a progress report in the monthly routine work submittal book.

The Contractor is responsible for scheduling the work and for coordinating with the engineer whenever Engineer-witness functions are required. The Contractor shall also advise the engineer when each location is complete and shall provide a written certification to that effect. The Engineer reserves the right to require a final inspection of the modification at any or all of the locations certified as complete. Should deficiencies be found upon inspection, a corrective work list will be prepared. If progress of the work is inadequate, or if errors in certified complete work are repeatedly found, the Engineer may initiate withholding of routine maintenance payment.

The surveillance installations being modified shall be kept operational at all times except as expressly allowed herein or otherwise permitted by the Engineer. The Contractor shall be responsible for all traffic control and temporary provisions required for the work, all at no additional cost. All cable, conduit, fittings and accessories shall be new. All materials and work shall be in conformance with the requirements of applicable Contract Special Provisions and specifications and article 250 of the National Electrical Code.

The Contractor shall be responsible for coordination with the Electric Utility as necessary and shall be responsible for reporting any account modifications arising from the work to the Engineer in a timely manner. Although it is anticipated that all service agreements and accounts will remain as-is, if new agreements are required, the Contractor shall facilitate coordination between the Electric Utility and the Engineer, with the Department to sign any appropriate new agreements.

The work will generally include:

- Replacement of the electric service entrance equipment and cables
- New grounding of the service
- New feeder conductors from the service disconnect to the controller cabinet
- Cabinet grounding modifications
- Supplementary ground electrodes at handholes
- Extension of equipment ground wires to all poles, posts, handholes, etc.
- Bonding of equipment ground to all exposed metal parts
- Testing and documentation

Replace Electric Service Entrance

The work shall include the removal of the existing service disconnecting means and the service conductors and shall include the furnishing and installing a new pole-mounted or pedestal-mounted service disconnecting means and new service conductors, based on the manner of the existing

service. The new electric service disconnect, cables and the service connection shall be in accordance with details included herein. Unless otherwise indicated, the pole-mounted electric service box provided for these installations shall be as shown in Figure L-3A, in Section 1, Article 7.0, unless specified otherwise by the Engineer.

Provide New System Ground of Electric Service

The work shall include the installation of a new system ground, connected to the ground bar of the service disconnect, using one or more ground rod grounding electrodes, or other means approved by the Engineer. The system ground shall have a resistance to earth not to exceed 10 ohms without connection to the additional electrodes established at poles or other points at the surveillance/DMS location. The system ground resistance shall be verified by a contractor test, using the fall-of potential method and witnessed and approved by the engineer, with a record of the test entered by the Contractor and signed by the Contractor and the Engineer. Should more than one electrode be required to establish a low enough resistance, additional electrodes shall be connected to the grid, with re-testing. All ground electrode connections shall be exothermically welded. Ground rods and grounding electrode conductors shall be as specified and detailed.

The service grounded circuit conductor (which may or may not be a system neutral) shall be bonded to the system ground at the service disconnect and shall be isolated from ground throughout the remainder of the electrical distribution.

Extend New Conductors to Controller

A new ground terminal bar shall be installed at the surveillance cabinet and this bar shall be bonded to the cabinet enclosure. The work shall include the replacement of the existing feeder and the extension of new feeder conductors from the service disconnect to the surveillance cabinet. The cable will be a multi-conductor jacketed cable as specified and it shall include a green-insulated ground wire to bond the service ground bar to the controller cabinet ground bar. The Contractor shall confirm the integrity of the existing feeder conduit run, and shall clean the run before installing the new feeder. If the size of the conduit is demonstrated to be inadequate for the new feeder cable or if it is demonstrated as not re-usable for some other reason and no other alternative is feasible, the contractor shall use a new feeder conduit run, as part of this routine maintenance work, with all cable work remaining as the Contractor's responsibility at no additional cost.

Cabinet Grounding Modifications

The Contractor shall confirm the presence of a terminal bar, with suitable terminals, for the grounded circuit conductor (white wire) at the controller cabinet and shall assure isolation of this bar from the cabinet enclosure and other grounded parts. If the existing bar is inadequate or is not isolated properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items. Similarly, the contractor shall confirm the presence of a ground bar, with suitable terminals, which is bonded to the cabinet enclosure and grounded metal parts. If the existing ground bar is inadequate or is not bonded properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items.

Extension of Equipment Ground

The contractor shall extend an equipment ground conductor from the ground bar in the controller cabinet to distributed elements of the system, bonding the equipment ground conductor to all handhole frames, metal poles and other enclosures, metal conduit, etc., including any existing supplemental ground rods that may be in place. The Contractor shall assure that good equipment ground continuity and a low-impedance ground return path is established throughout for all exposed metal parts of the installation.

It is not the intent of this work item to require re-cabling of the surveillance load equipment to achieve grounding. In all cases, a green-insulated ground conductor shall be used whenever possible, and only if conduit space will not accommodate an insulated conductor will a bare conductor be allowed. A common conductor may be employed for multiple load circuit cables in a given conduit, but an equipment ground conductor shall be run with or shall encircle each set of circuit conductors extended from the controller cabinet.

Recognizing the intent to leave existing conductors in place and operations, the contractor may chose from among identified and prioritized acceptable alternative to affect the grounding modifications:

If an existing conduit will accommodate the installation of a ground wire, the ground wire shall be installed within the conduit with the circuit conductors. Existing conductors should only be withdrawn from a conduit run to facilitate pulling of the ground wire if absolutely necessary.

If an existing metal conduit will not accommodate the required ground wire, and if the Contractor can identify end-to-end electrical continuity of the conduit, the Contractor may bond to the conduit externally in an approved manner to establish ground continuity, thus using the metal conduit as the equipment ground conductor.

If a given conduit run is demonstrated to be damaged and electrically discontinuous in the presence of the Engineer, and if no other alternative is feasible, the Engineer will authorize a new conduit run, to be paid under separate pay time, with all cable installation to remain part of the grounding modification work at no additional cost to the pay item. When a new conduit is installed, an insulated ground conductor must be installed within, together with the circuit conductors, regardless of the ground continuity of the new conduit, and the new conduit shall be appropriately bonded to the equipment ground.

Bonding

The Contractor shall establish equipment ground bonding to the cover frame of every handhole with an approved connection. The contractor shall establish equipment ground bonding at every metal pole, post or other enclosure or device, also with an approved connection. At poles or post bases, it may be possible to install washers, lugs, and extra nuts where extra anchor bolt protrusion allows it. Otherwise, poles may be drilled and tapped and fitted with appropriate ground lugs. Connections at poles and other enclosures shall be pigtailed from splices whenever more than one ground conductor is connected so that ground continuity is not dependent upon ground lug connection. Splices of ground conductors (in lieu of exothermic weld connectors) will be permitted at poles an other such connection point above grade, with splices to be made using suitable copper crimp sleeves and heat-shrink insulated caps as specified.

Testing and Documentation

As noted above, the system ground resistance to earth shall be tested, in isolation from equipment ground extensions from that point. Testing shall be performed by the contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the contractor and witnessed by the Engineer.

9.19 LOGS AND FORMS

A sample of logs and forms as required for this Contract will be available at the Pre-Bid Meeting.

ARTICLE 10.0 – TRAFFIC SIGNAL SYSTEM

10.1 TRAFFIC SIGNAL SYSTEM DESCRIPTION

The Traffic Signal System consists of electronically operated traffic control devices owned and maintained by the Department, which includes traffic signal installations and the integrated closed-loop traffic signal monitoring system, and flashing beacon installations.

The Traffic Signal installations (locations) include, but are not limited to, master and local controllers, time base coordinators, coordination units, intersection monitors, modems, controller cabinets, battery backup systems (UPS), phone lines, microwave communication lines, detectors (induction loop type, magnetic type, wireless type, microwave type, video type, pedestrian push-button and infrared type, and light sensing or radio communication emergency vehicle type), incandescent and light emitting diode (LED) signal heads (traffic and pedestrian), aviation red obstruction beacons, internally illuminated, fiber optic signs, LED signs, audible and countdown pedestrian signals, electronically steerable beam LED signals, in-pavement lights, hybrid beacons (pedestrian and emergency vehicle) systems, LED enhanced signing, traffic signal posts, mast arm assembly and poles, electric cable (standard multi conductor, shielded multi conductor, coaxial and fiber optic), conduit, communications lines and conduit between intersections, concrete foundations, handholes, junction boxes, service installations, ground rods, railroad interconnect security systems, tilt/pan/zoom video cameras and control units, red light running enforcement video cameras, microwave interconnect systems, radio interconnect systems, Cisco communication switches, video decoders, and other appurtenances. The Closed Loop Monitoring System (CLMS) includes approximately 325 master controllers interconnected to 2400 intersection controllers. Also included in the CLMS is the interconnect cable, conduit, handhole systems, hardware, software, supplies for the Schaumburg headquarters office, and CLMS field equipment for monitoring. The Lake County Traffic Management Center (TMC) currently includes approximately one hundred (175) and Kane County TMC has less than twenty-five (25) IDOT intersection controllers with additional intersections planned.

The flashing beacon installations include both low and high mounted twelve inch signal sections, a service installation, flasher controller in cabinet, cable and conduit as well as solar flashers and all necessary appurtenances.

All signal mast arms and combination mast arms shall be maintained under Article 10, the Traffic Signal System. The luminaire(s), the lighting mast arm, and cabling for the luminaire on combination mast arm poles shall be maintained under Article 7, Lighting and Sign Illumination System. Standard light poles that have traffic signals attached will be maintained under Article 7, except in some instances the poles may be under maintenance of other agencies.

10.1.1 TRAFFIC SIGNALS (REFER TO SECTION 3, T-1A)

The Contractor shall maintain all traffic signal equipment located at a traffic signal installation location and the District 1 Closed Loop Monitoring System. A traffic signal installation location shall consist of all equipment controlled by one local traffic signal controller, including but not limited to the following:

- Traffic signal heads, traffic signal posts, mast arm assemblies, poles and foundations (The traffic signal heads shall consist of but not limited to signal sections, back plates, reflective back plates, louvers, visors, aviation red obstruction lights, special signal sections with flashing white strobes, incandescent lamps, programmable and steerable beams and light emitting diodes modules.)
- Pedestrian signal heads, pedestrian push button detectors, infrared detectors, audible pedestrian signals, countdown pedestrian signals and associated signs
- A pre-timed, semi-actuated, or NEMA I or NEMA II actuated controllers and cabinets (The controllers may be electrical mechanical or solid state types with volume-density features, railroad and/or fire preemption and time base coordination.)

(The railroad preemption, fire preemption and time-base coordination may be internal, a module, or external to the controller.)

- The controller cabinet with all associated equipment, system communications equipment, battery backup systems (UPS), switching units, intersection coordinators, time switches and, where applicable, control pedestal and foundation
- Emergency vehicle preemption equipment and intersection monitoring devices, where applicable (The cost of repairing or replacing the emergency vehicle preemption equipment shall be invoiced, by the Contractor, directly to the local agency, as instructed by the Signal Engineer.)
- Red light running enforcement equipment is generally located within State ROW and utilizes separate facilities than the traffic signal installation except access to field cables within the controller cabinet for signal status is permitted. Red light running enforcement equipment is not the maintenance responsibility of the State or this contract. However, if the red light running system impacts the normal operation or visibility of the traffic signals or is determined to be a safety hazard by the Signal Engineer, the cost of repairing, replacing, removing or the like shall be invoiced by the Contractor directly to the local agency as instructed by the Signal Engineer.
- Magnetic detector(s), wireless detector(s), video detector(s), cameras, detector loop(s), micro loops, preformed detector loops, microwave detector(s), radar detector(s) systems and emergency vehicle detector(s) along with their related amplifiers, microprocessors, access points, relays, video decoders, relays and diodes

(The maintenance of video detection shall include all necessary modifications to programmable detection zones. Microwave Communication for Video Detection including transmitters, receivers, antennas, reflectors and other miscellaneous communication equipment either on the sending end, receiving end or in between shall be included as part of the Video Detection.)

- Illuminated regulatory and warning signs
(The illumination shall be accomplished by incandescent lamps, fluorescent lamps, neon tubes, light emitting diodes or fiber optic lights.)
- Illuminated street name signs
(The illumination is generally accomplished by light emitting diodes. For lighted street name signs not maintained by the State, the cost of repairing or replacing any associated equipment shall be invoiced, by the Contractor, directly to the local agency, as instructed by the Signal Engineer)
- Traffic signal conduit and interconnect conduit between traffic signals
(The conduit may be in the ground or attached to structure.)
- Traffic signal handholes and interconnect handholes
- Traffic signal cable and interconnect cable including copper wire and fiber optic
- Traffic signal wireless interconnect system
- Electrical and telephone service installations
- Pan, tilt and zoom camera installations.

- Traffic adjusted master controllers with solid state features with associated equipment and where applicable, cabinet and foundation
(The associated equipment shall consist of modems, telephone jacks, switching units, interface boards for copper and fiber optic type interconnect cables, noise suppressers and all associated components for a coordinated traffic control system.)
- Railroad interconnected traffic signal equipment, conduit, wiring, and security systems
- Signal heads and conduit attached to railroad cantilever structures
- Grounding systems complete with ground rods, ground wells, and grounding cable
- Flashing or steady burn LED enhanced warning and regulatory signs may include pedestrian actuation, supplemental lighting, solar panels, batteries, radio control cabinet and other all necessary appurtenances. (For flashing or steady burn lighted signs not maintained by the State, the cost of repairing or replacing any associated equipment shall be invoiced, by the Contractor, directly to the local agency, as instructed by the Signal Engineer)

10.1.2 SPAN WIRE TRAFFIC SIGNAL (REFER TO SECTION 3, T-1B)

The Contractor shall maintain a span wire traffic signal installation, complete.

An installation shall consist of all equipment controlled by one local traffic signal controller including signal heads, two (2) or more per approach and any number of signal sections, wood poles with down guys, span wire cable, span wire accessories, tether wires, electric cables, the service installation, pedestrian signal heads and detectors, vehicle detectors, battery back-up (UPS) and other system equipment.

10.1.3 FLASHING OVERHEAD MOUNT BEACONS (REFER TO SECTION 3, T-2A)

The Contractor shall maintain a signal head(s), flashing beacon, overhead mounted, flasher controller in a housing and the complete span wire installation. The signal head shall consist of one (1) or more faces with any number of signal sections. The span wire installation shall consist of two (2) or more wood poles with down guys, span wire cable, span wire accessories, electric cable, ground rods, service installation, conduit, and handholes.

10.1.4 FLASHING LOW MOUNT BEACONS (REFER TO SECTION 3, T-2B)

The Contractor shall maintain a signal head(s), flashing beacon low mount, solar powered flasher (where applicable), flasher controller in a housing, ground rods, service installation, a traffic signal post, foundation, conduits and handholes. The signal had may consist of one or more signal sections mounted on the same object.

10.2 GENERAL MAINTENANCE RESPONSIBILITIES

The Contractor shall maintain all items listed in the System Description under routine maintenance, unless otherwise stated herein. Unless specifically noted, all work required herein this Article shall be paid through routine maintenance. Also refer to general response and maintenance requirements as listed in Article 4.0. In addition the Contractor shall:

- Maintain the IDOT inventory of traffic signal equipment on database software as directed by the Engineer
- Maintain and update the EMCMS data for all traffic signal items
- Maintain a library of repair and operation manuals for equipment in the IDOT signal inventory
- Purchase and maintain up to date licensed software to operate and maintain all Closed Loop Traffic Signal Systems, Video and Detection Systems, and related management

systems for Contractor personnels' and IDOT Signal and System Engineers' laptop and desk computers

- Purchase and maintain repair and testing equipment necessary to meet the response or repair time requirements of the Contract.
- Provide technical assistance at traffic signal inspections and maintenance transfers
- Provide two week inspections of the traffic signal system through Contractor provided staff of IMSA level II technicians
- Trim vegetation to provide visibility of traffic signals
- Relamp all 135 watt and 90 watt signal sections on a two year program. Relamp all 54 watt and 150 watt lamps annually. Relamp 80 intersections with LED type signal sections annually.
- Inspect all mast arm poles yearly and provide report on damage poles
- Inspect conflict monitors once every two years
- Inspect all railroad interconnected signals on the State highway System (even those maintained by others) on a yearly basis
 (This inspection shall be coordinated with members of the Illinois Commerce Commission (ICC) and the associated railroad companies.)
- Maintain the District's Closed Loop Traffic Signal System (CLMS) as described in detail within this article. This includes monitoring and maintenance of any signals included in the Lake County, Kane County and any other County within Region One/District One Traffic Management Center (TMC). The Contractor or County, at no cost to the Department, will supply any new software required for the TMC. The signals within the TMC network will be monitored as described in the CLMS later in this Article. The necessary computer components (use of one or more PCs is anticipated) and one or more standard phone lines required to interface with the TMC are included in the CLMS. All CLMS requirements remain in effect for all signals transferred to this system.

10.3 RESPONSE AND REPAIR TIME REQUIREMENTS

The Contractor shall respond to all malfunctions of the traffic signal system in a reasonable time. In addition to the daily routine and non-routine maintenance requirements of the traffic signal system, the Contractor shall provide sufficient manpower to respond to all notification of malfunctions on a 24-hour basis, 7 days a week. The Contractor is required to keep a time and date log of each response from the time of the initial report (ticket issuance) to the time of the final permanent repair. The Contractor is required to notify the Traffic Signal Engineer when any response time is not met.

Article 4.0 discusses general work requirements of routine maintenance for all systems. The following chart lists maximum response, service restoration, and permanent repair times, the Contractor will be allowed to perform corrective action on the Traffic Signal System.

ITEM	RESPONSE TIME	SERVICE RESTORATION TIME	PERMANENT REPAIR TIME CALENDAR DAYS
FAILURE/DAMAGE (any type) TO:			
CABINET	1 HR.	24 HR.	21 DAYS

CONTROLLERS AND PERIPHERAL EQUIPMENT	1 HR.	4 HRS.	21 DAYS
SYSTEM DETECTOR LOOP	1 HR.	NA	7 DAYS
ALL OTHER DETECTORS	1 HR.	NA	21 DAYS
SIGNAL HEAD/LENSES	1 HR.	4 HRS.	7 DAYS
AVIATION RED BEACON	1 HR.	4 HRS.	7 DAYS
MAST ARM ASSEMBLY AND POLE	1 HR.	4 HRS.	* 7 DAYS
TRAFFIC SIGNAL POST	1 HR.	4 HRS.	7 DAYS
CABLE/CONDUIT	1 HR.	4 HRS.	7 DAYS
INTERCONNECT/TELEMETRY	1 HR.	4 HRS.	7 DAYS
GRAFFITI, REMOVAL	NA	NA	7 DAYS
MISALIGNMENT OF SIGNAL HEADS	1 HR.	4 HRS.	4 HRS.
CLOSED LOOP MONITORING SYSTEM	1 HR.	24 HRS.	14 DAYS
POST & POLES PLUMB VERTICALLY	NA	NA	21 DAYS
COMPLAINTS/CALLS/CONTROLLER OR SYSTEM ALARMS/TIMING/PHASING/PROGRAMMING	1 HR.	4 HR.	NA
PATROL TRUCK DEFICIENCIES	24 HRS.	24 HRS.	24 HRS.

* Mast arm assembly and pole must be set within 7 days after foundation repairs are completed or after a replacement pole and/or arm assembly become available. In the case of a new pole and/or arm assembly the Contractor must furnish a copy of the signed and dated delivery receipt from the shipping company. Temporary head placement shall meet the requirements of the MUTCD for driver visibility.

10.4 REPAIR OF SIGNAL LAMP/MODULE OUTAGES

Signal indication and internally illuminated sign lamp outages must be replaced in the following manner:

Immediate corrective action must be provided if only one (1) signal indication remains in operation on an approach. This also includes left turn and right turn arrow indications if only one (1) signal indication remains in operation. If two (2) or more signal indications remain in operation for any given phase (movement) on any approach to an intersection, the replacement of the burned-out lamp, damaged socket, or damaged cable shall be accomplished within one (1) working day for red or red arrow indications and two (2) working days for all other indications

following discovery and/or notification of the outage. Immediate corrective action must be provided for burned-out pedestrian indications and internally illuminated signs. The replacement of a damaged socket or damaged cable for a pedestrian signal indication or burned-out lamps in an internally illuminated sign such that the illuminated symbol is still identifiable must be accomplished within the next working day following discovery and/or notification. At the time of replacement of a burned out lamp or lamps, the reflector and lens shall be cleaned. All replacement lamps shall meet the requirement of Article 10, Group Relamping of flashing beacon and traffic signal locations.

10.5 SIGNAL DAMAGE EQUIPMENT REPLACEMENT

Damage to flashing beacons or traffic signal heads requires immediate corrective action. Refer to Article 4.0 for EMCMS documentation requirements.

The location of a temporary or permanent traffic signal head installation shall meet the requirements of the Manual on Uniform traffic Control Devices and the following:

- The minimum acceptable signal display is two (2) far side signal faces directed toward the through traffic movements of each approach and two (2) signal faces directed toward any separate turning movement (where provided) on each approach pending permanent repairs, except where the distance from the stop line to the far side signal exceeds one hundred fifty (150) feet which requires a near right signal face to be in place.
- Signal faces on mast arm assemblies for through traffic on any one (1) approach shall not be less than eight (8) feet apart measured horizontally between center lines of face with a minimum mounting height of seventeen (17) feet above the crown of pavement surface. See the District's Detail Sheets for additional mounting requirements.
- Locations where pedestrian signal indications are present one (1) pedestrian signal head must face each direction of a pedestrian crosswalk.
- A span wire signal face shall contain the same type, number, and size of lenses as the signal face being replaced. Twelve inch sections may be used to replace eight inch or nine-inch sections. LED modules should be replaced with LED modules of the same make to minimize performance differences, unless directed otherwise by the Engineer.

10.6 POWER OUTAGES AND FLASHING OPERATION PROCEDURES

When repairs at a signalized intersection require that the controller be disconnected and power is available, the Contractor shall place the intersection on flashing operation. If there is no flasher, the Contractor shall install a temporary flasher in the controller cabinet. The signal shall flash red for all directions unless a different flashing operation has been directed by the Engineer.

At signal installations where power is not available, due to a power failure, or a flasher must be installed, the Contractor shall install at least one stop sign, Illinois Standard Sign R1-1-30x30 on each approach to the intersection as a temporary means of regulating traffic. The stop sign shall be located at the stop bar and mounted at a height of 5-ft above curb or shoulder with a set-back of 12-ft from travel pavement unless otherwise directed by the Engineer. The Contractor when installing temporary stop signs must switch the controller to the flashing operation when responding to a power failure. If the approach flash is yellow, the Contractor is not to place a temporary stop sign unless the flashing operation is changed to red by direction of the Engineer. The Contractor shall furnish and equip all vehicles involved with the maintenance of traffic signal installations with a sufficient number of stop signs to be erected as specified herein.

10.7 NEW, REVISED OR TRANSFERRED TRAFFIC SIGNAL AND FLASHING BEACON INSPECTIONS

The Contractor shall furnish a trained representative for each traffic signal inspection that requires a new or existing traffic signal installation to be added to the Contract or the transfer of an existing traffic signal installation of this Contract to another agency or contractor. Refer also to transfer requirements in Article 4.0 The Contractor shall:

- Analyze all induction loop detector loops at the controller cabinet insuring that each detector loop or set of detectors conforms with the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications.
- Analyze the controller program provided by the controller manufacturer to insure that the phase and overlap designation on the traffic signal sequence drawing is provided correctly in the controller program and cabinet wiring drawings.
- Insure that the phase timings in the traffic signal controller are those provided by the Department.
- Assist in placing the traffic signal in operation by observing the signal display and checking of the conflict monitor while all vehicle traffic is stopped, and shall report any operational discrepancies or signal outages to the Signal Engineer immediately.
- Assist the Engineer in walking all approaches of the signal installation inspecting all traffic signal items for conformance with the Departments specifications for the project and aiming of the traffic and signal heads.
- Assist in the testing and adjusting of emergency vehicle preemption equipment. The Contractor shall insure that any time railroad preemption is in operation with emergency vehicle preemption that the railroad preemption has priority over the emergency vehicle preemption equipment.
- Assist in the testing and adjusting of UPS equipment
- Insure that the locations containing railroad preemption are programmed in accordance with the approved railroad preemption program and that all special lock out devices are operating.
- Be responsible for inspecting each location to determine the completion of construction punch lists as directed by the Signal Engineer. The punch lists shall be prepared and provided by the Engineer and the Contractor shall return written verification of punch list completion or non-completion.
- Upon request, review locations proposed for loop replacement in ongoing pavement resurfacing or grinding construction contracts.

10.8 PATROL INSPECTIONS

10.8.1 GENERAL REQUIREMENTS

Unless otherwise permitted or requested by the Engineer, except for emergencies, the Contractor is required to schedule the IDOT traffic signal patrol routes the first portion of each workday and on the approved route day. Emergency services required by IDOT or other agencies shall be attended to immediately, however, any incomplete daily patrol shall be completed (by others or the original patrolman) during the normal patrol work week. This may require patrols after the normal workday has ended in order to complete the normal patrol workweek.

The Engineer shall be notified on a daily basis via email to all IDOT Area Engineers and Technicians at the end of the Patrol workday of the following:

- List of all incomplete patrols for the day
- Specific reason for each individual incomplete patrols
- Plan as to how Contractor will make-up each incomplete patrols

All repairs not completed at the time of the patrol route inspection must be logged and turned over to Contractor's area supervisor. Repairs not completed at the time of the patrol route inspection are subject to the time limits in Article 10. All Patrol records shall be maintained and submitted to the traffic signal engineer weekly.

The Contractor shall provide a sufficient workforce and equipment to patrol all flashing beacon and traffic signal locations. Each installation shall be patrolled and inspected every two (2) weeks for proper alignment of vehicle and pedestrian signal heads, lamp outages (all sections of every pedestrian and vehicular signal head), visors, backplates, alignment of posts and mast arm poles, aviation obstruction lights, special traffic signal sections with red lenses and accompanying circular white halo lamps, shielding of optically programmed faces, and general operation of the traffic signal. The Contractor shall repair or replace all worn, missing or damaged components as specified herein.

The EMC Dispatch Center is required to keep a Patrol Route Maintenance Log, which includes the following information. A copy of each log shall be provided to IDOT every month on CDROM. Every Traffic Signal Patrolmen shall notify the EMC Dispatch Center of the following:

- Patrolman Arrival Time and Approved Route Inspection Location
- Patrolman Departure Time and Approved Route Inspection Location
- Time and Reason for Patrolman Departure from Approved Route Inspection Location and Name of Municipality or Agency requesting the emergency service (Example: Accident with damage and traffic signal full outage -- Cook County requesting the Emergency Service)

10.8.2 ROUTINE PATROL DUTIES AND RESPONSIBILITIES

The Contractor's responsibilities shall include inspecting, repairing or replacing the following items:

- Align all signal heads, traffic signal posts, controller or service installation pedestals, mast arm assemblies and poles, and astro brackets. All poles, foundations, posts and astro brackets must be straightened to be vertically plumb.
- Check all anchor bolts for mast arm poles, signal posts, controller cabinets, and, in addition, all bolts used to attach the mast arm to the pole.
- Replace missing or damaged bolt covers, mast arm shrouds and handhole access covers. Tighten screws related to signal post base plates, backplates, anchor bolt covers, handhole access covers, service installation covers and controller cabinets. Repair or replace any failed or damaged signal components including signal controllers, cabinets or peripheral equipment, signal heads or mounting hardware, posts or mast arms, illuminated signs, detectors (vehicle and pedestrian), cable, conduit and other signal appurtenances which are part of a signal installation. Electrical grounds shall be maintained in accordance with the National Electrical Code.
- Provide a complete inventory of the signalized intersection including signal equipment located inside and outside of the controller cabinet recorded in the format determined by the Engineer.
- The Contractor shall at all times maintain stock of sufficient materials and equipment to make temporary and permanent repairs within the limits specified in Articles 4 and 10.
- The Contractor shall provide signal operating inspection tasks upon request such as:
 1. Inspect the timing operation of a signal installation at a specific time period and provide a recommendation for improving traffic flow
 2. Program timing parameter changes

3. Determine the phasing or operation of a signalized installation
4. Check the condition or verify the presence of equipment at a signalized location
5. Provide a copy of timing parameters in use at a signalized location
6. Provide recommendations to improve the safety or the operation of a signalized location
7. Provide a compiled list of all locations meeting a specified criteria

10.8.3 CONTROLLER AND CABINET INSPECTIONS

The Contractor shall provide a sufficient work force and equipment to inspect all controllers and cabinets as provided below:

- Once every four (4) weeks the patrol person shall visually inspect the inside of each controller cabinet. The visual inspection will include checking all timing intervals and time base coordination programs to insure all settings are correct including that the clocks are set to the same hour, minute and second at all locations within the time base coordination system.
- All detector amplifiers shall be visually inspected once every four (4) weeks to insure that the vehicle detectors are receiving vehicle calls and the calls are being placed into the Controller. Loop detector amplifiers with automatic vehicle identification necessary for bus preemption shall be inspected to ensure they are receiving vehicular phase calls and bus preempt calls; and the calls are being placed into the controller. Pedestrian push button detectors shall be tested by pushing each detector and watching for the related walk indication to appear.
- Test system communication for proper operation.
- Update database on appropriate software for closed loop monitoring system on a laptop computer.
- Equipment manuals, box prints and cable logs are to be maintained in each controller cabinet.
- GPS latitude and longitude coordinates of the controller cabinet, electric service location, fiber optic cable handholes and other items as listed herein, shall be recorded or verified annually for use in the District's record retention system.
- Uninterruptible Power Supply (UPS) shall be tested once every four (4) weeks to assure proper operation of the traffic signals upon loss of normal electric utility power. Manual transfer and power loss transfer shall be tested which shall not put the signal in flash. Nominal output voltage and current along with battery string voltage shall be measured and compared to manufacturer's expected values and recorded.
- Railroad preemption, emergency vehicle preemption and bus preemption shall be tested during the cabinet inspection. All program settings and each sequence of operation shall be verified to be correct during each inspection.
- Emergency Vehicle Preemption equipment shall be tested during the cabinet inspection. All costs of repairing or replacing damaged or missing emergency vehicle preemption equipment is the responsibility of the local fire district or municipality and should not be reflected in the Contractor's bid price for routine maintenance items (maintaining the light detectors, light detector amplifiers, radio transmitters and receivers, antennas, confirmation lights, cables and/or related components). The Contractor shall notify the

agency immediately that their pre-emption equipment is not operating and ask if immediate repairs are requested or if an estimate of repairs is necessary before repair work is provided. A copy of all WR Tickets, correspondence and invoices shall be provided in the monthly routine maintenance work documentation book.

10.9 SITE MAINTENANCE

The Contractor shall trim trees and bushes blocking the line of sight of the traffic signal face to the motorists. Line of sight standards are established in the Manual on Uniform Traffic Control Devices for Streets and Highways. All trimmed branches shall be legally disposed of by the Contractor off the right-of-way. An annual Tree Trimming Schedule shall be prepared by the Contractor and submitted to the Engineer for approval by October 1 of the contract year. The Engineer, at any time during the contract year, may request trimming of trees or bushes in addition to the locations scheduled. This trimming must be completed immediately.

10.10 GROUP RELAMPING OF FLASHING BEACON AND TRAFFIC SIGNAL LOCATIONS

10.10.1 SCHEDULES AND REPORTS

The Contractor shall replace all lamps at state maintained flashing beacon and traffic signal locations as described below. This work shall be completed between April 1 and August 1 of the contract year. All 135 Watt 12" signal lamps and 90 Watt pedestrian signal lamps shall be relamped in the first year of the contract, utilizing a two year bulb as described in the lamp specifications. All remaining incandescent lamps will be relamped annually.

The Contractor shall provide a schedule of all locations to be relamped by each relamping crew. This schedule shall be approved by the engineer. If more than one crew is used, each crew is to work within a different patrol route. Each relamping crew is to be equipped with an EMC Contractors wireless communications unit and the number shall be furnished to the Department Traffic Engineers and Technicians prior to the start of work. The Contractor is to notify the Engineer, in writing, of his planned starting date. On the first day of relamping, through the completion of relamping, the Contractor shall include on the Daily Traffic Signal Agenda the following:

- Call number of each relamping crew leader
- The relamping route number, the week of the patrol route, the day of week in the patrol route and the intersection that the crew is starting from

Upon completion of the relamping, lens washing and reflector washing, the Contractor shall furnish to the Engineer a completion report.

The schedule for the second year relamp program shall be approved by the Traffic Signal Engineer prior to commencement. Patrolmen will not be used for group relamping until routine patrols are completed. Documentation shall be provided to the Traffic Signal Engineer on a daily basis indicating what routes will be covered in the group relamping, what personnel will be used, and must also submit a statement of completion of routine patrol.

10.10.2 DAILY REPORTS

At the completion of each day's work each relamping crew shall furnish a report indicating all locations which were relamped that day. The report must also indicate lenses that were replaced and lenses that require replacement that the crew did not have a supply of and must be replaced later. This written report must be sent to the Traffic Signal Engineer's office by email before 7:15 AM of the next working day. The starting location of a relamping crew may be revised at the direction or approval of the Traffic Signal Engineer.

10.10.3 LENS CLEANING AND REPLACEMENT

The Contractor shall as a part of the relamping wash the reflector and inside and outside of each lens. Lenses that are damaged in any manner whatsoever must be replaced. This includes lenses that have discolored areas, holes, and arrow and pedestrian lenses that are peeling and light is visible in areas other than with the prescribed arrow or "Walk or Don't Walk " area.

The Contractor is required to replace damaged lenses for any part of the signal system as needed or as directed by the Engineer, regardless of annual or bi-annual relamp schedule.

10.10.4 SPECIAL TYPES OF LAMPS REQUIRED FOR SPECIAL INDICATIONS

All Aviation Red Obstruction Lights on traffic signal posts or mast arm assemblies and poles shall be relamped at the same time the traffic signal installation is relamped as part of the yearly traffic signal group relamping. The lamps used in the Aviation Red Obstruction Lights shall meet or exceed the requirements for the fixture's lamp set by the manufacturer of the fixture.

Special traffic signals sections with red lenses and accompanying circular white halo strobe lamps shall be relamped.

L.E.D. lamps shall be tested with an optical meter each year to determine the need for replacement. Readings from the optical meter shall be compared to manufacturer's minimum requirements and those lamps not meeting minimum performance values shall be replaced. Replacement of L.E.D. lamps when determined to be necessary shall be paid as routine maintenance work or covered by manufacturer warranty. The contractor shall record for the Traffic Signal Engineer the manufacturer, model, and serial number of each L.E.D. module needing replacement. Routine repair of L.E.D. single outages and damaged equipment will be as described for other lamps elsewhere in this article.

10.10.5 SPECIFICATION OF LAMPS

All incandescent lamps provided for relamping must have the current calendar year placed in the area containing the lamp's rating. The 150 watt special lamps for optically programmed signals and fluorescent lamps must be dated with indelible ink. The marking shall be on the back of the 150 watt lamp and on the left end of the fluorescent lamp. The lamps provided by the Contractor shall meet the following criteria:

- Twelve inch signal sections: 135 watts, 1650 minimum initial lumens, 16,000 hour lamp life with a two year warranty, 95% Krypton gas filled clear bulb, 3 inch light center (incandescent lamp). H&H Industries 135A21 or approved equal.
- Eight inch traffic or nine inch pedestrian sections: 54 watts, 530 lumens, 8,000 hour, 3 inch light center (incandescent lamp).
- Twelve inch pedestrian signal section: 90 watts, 1000 minimum initial lumens, 16,000 hour lamp life with a two year warranty, 95% Krypton gas filled clear bulb, 2-7/16 inch light center (incandescent lamp). H&H Industries 90A19 or approved equal.
- Twelve inch optically programmable section, 150 watts, 6,000 hours (seal beam)
- Fluorescent and other replacement lamps shall be replaced with a lamp of similar characteristics and wattage's. All fluorescent lamps shall be CAW/HO type.
- Aviation Red Obstruction Light lamps are to meet or exceed the recommendations of the fixture manufacturer.
- Special traffic signal section with red lens and accompanying circular white halo strobe lamps shall meet or exceed the recommendations of the fixture manufacturer.

10.10.6 LAMP DISPOSAL

The Contractor's crew must relamp the entire intersection on the same working day. Old lamps shall be disposed of in accordance with the manufacturer recommendations and Environmental Protection Agency and requirements in Article 4.0 as stated herein.

10.10.7 LED RELAMPING

The Contractor shall replace all LED displays (intersection and pedestrian signals) at eighty (80) state maintained traffic signal locations annually. The locations to be relamped are intended to be designated by the Engineer prior to March 1 of the contract year. It is intended that the Contractor complete the work within the calendar year.

Each intersection shall have a consistent make and model of LED display installed. Each LED display installed shall be labeled with the month and year of installation. The LED display shall

meet all current ITE standards and all relevant NEMA specifications. The existing LED display shall become the Contractor's property.

10.11 ANNUAL CONFLICT MONITOR TESTING PROGRAM

Conflict monitors shall be tested once every two years. One-half of the system shall be tested by December 31st of each year. The Contractor shall conduct a complete test of all conflict monitors or management malfunction units. The testing method shall be pre-approved by the Engineer and shall test all the features of the monitors or units as required by the Engineer.

Unless prior approval is given by the Engineer, all the above items shall be completed by the Contractor within the same working day at a single traffic signal installation. The Contractor shall provide a schedule for this work to the Traffic Signal Engineer. Any deviation from the approved schedule shall be approved by the Engineer.

The Contractor shall provide a final completion report listing all the signal installations with the date the work was completed and verifying that each item has been completed. The Contractor will be required to provide Progress Reports at the Traffic Signal Engineer's request showing the locations which have been completed to that date.

Conflict Monitors/ Malfunction Management Units shall not be replaced at railroad interconnected intersections without prior notification of the Traffic Signal Engineer.

10.12 ANNUAL MAST ARM ASSEMBLY AND POLE INSPECTION

The Contractor shall inspect all mast arm assemblies, mast arm poles and astro brackets (or other types of hardware) supporting traffic signal heads or pedestrian signal heads. (Also review Contractor Advisory Inspections in Article 4.0.)

This inspection shall be completed between April 1 and August 1 of the contract year and may be concurrent with the group relamping in Article 10.11 or done separately. The Contractor shall furnish schedules for this program a minimum of one week in advance of the start of work. The inspection shall be conducted in the same manner as described in Article 10.11, which requires reporting the Daily Work Schedule and follow-up documentation of the work. The inspection shall focus on the structural elements of the mast arm assembly and must include a close-up, arms length investigation of the following elements:

Mast Arm Pole	Mast-to Pole Connection Base Plate	Anchor Bolts
------------------	---------------------------------------	--------------

The arm of the assembly should be visually inspected at all signal head connections for any defects, such as cracks or buckles. The mast arm-to-pole connection should be inspected for significant loss of section, cracks in welds or base metal, and deterioration of the connection plates. The bolts of the arm-to-pole connection should be inspected for tightness and condition.

The pole should be checked for external corrosion, impact damage, perforation by rust through, and any discernible deflection, distortion or cracking. The pole should be closely checked for corrosion near the base plate, especially if mounted on a grout bed. The welds of the pole-to-base plate connection should be checked for cracks.

The base plate should be checked for any severe section loss or deformation.

The anchor bolts of the mast arm should be inspected to verify that the existing nuts are not loose or missing. The anchor bolts should also be checked for any corrosion or bending.

Upon discovery of any buckles, significant structural defects (loose nuts, severe corrosion or dents, cracks in welds, plates or structure, etc.), the Contractor will immediately notify the Illinois Department of Transportation at (847)705-4139 and take corrective action as directed by the Signal Engineer to insure the assemblies do not pose an immediate hazard.

The Contractor's crew must inspect the entire intersection on the same working day.

The Contractor shall provide the Engineer a completed form MA-1 or MA-2 (single or double mast arm assemblies), "Annual Mast Arm Inspection Report Form" for each Department maintained traffic signal mast arm assembly and pole inspected by September of the contract year in pdf format on a CDROM.

10.13 ANNUAL RAILROAD INTERCONNECTED TRAFFIC SIGNAL INSPECTION

The Illinois Commerce Commission will conduct an inspection of all Department traffic signal locations, which are interconnected with railroad crossing flashing signal warning devices with or without railroad gates. Locations not maintained by the Contractor but under the District 1 route jurisdiction system are also included. The inspection shall be completed on an annual basis during the calendar year. In addition to the Contractor an inspection team may consist of personnel from the Department's Bureau of Traffic, the railroad responsible for the railroad crossing warning equipment, and the Illinois Commerce Commission. The signal engineer will schedule the inspection of each railroad interconnected location based on the availability of personnel from each involved agency.

The Contractor shall be responsible for making all necessary measurements as directed by the engineer. He shall determine all signal time intervals and controller settings, which pertain to railroad preemption. The sequences of operation shall be checked and the Contractor shall conduct all necessary tests. Any deficiencies or recommendations shall be reported directly to the engineer.

The Contractor shall maintain and update individual security software and proms for the approximately 150 railroad interconnected signals in District 1. These items shall remain under strict security and be transferred back to the Department at the end of the Contract. The Contractor shall at all times provide and maintain one (1) Eagle/Siemens traffic signal controller and (1) Econolite traffic signal controller, at a location to be approved by the Traffic Signal Engineer, loaded with District 1 approved security software, which can be used to replace damaged equipment in the field. The controller model shall be as directed by the Signal Engineer.

10.14 DETECTOR LOOP MAINTENANCE AND REPLACEMENT

10.14.1 TRAFFIC SIGNAL LOOP RESEALING

The Contractor shall reseal all existing traffic signal detector loop wire which has become exposed or as directed by the Engineer. The Contractor will clean all debris and damaged detector loop sealer from the existing saw cut. Loop detector wire that is exposed will be reinstalled into the existing saw cut and held in place by wedges prior to the resealing of the detector loop.

10.14.2 DETECTOR LOOP REPLACEMENT

The Contractor must replace all detector loops, which become inoperable. The cost of replacing the detector loop shall be part of Traffic Signal Routine Maintenance. Detector loops that are damaged by state forces shall be replaced and paid through a Non-Routine Authorization letter. A detector loop, which is milled out during a pavement resurfacing, will be replaced as part of the Department's resurfacing contract. The Department's Electrical Maintenance Contractor will be notified by the Engineer and dispatch a patrol person to the location to disconnect the loop detector cable from it's terminals and place the affected phase or phases on maximum recall. At this time the Engineer will instruct the Contractor representative as to the maximum green time that is to appear for each of the affected phases.

System Detector Loops shall be replaced throughout the entire year. Non-System Loops, at the Contractor's option, between November 30th and March 1st, may be replaced by a loop or with a temporary microwave detector at no additional cost to the Department. The microwave detector shall be installed to provide adequate detection in place of the detector loop to the satisfaction of the engineer and it shall be removed and replaced permanently by a detector loop by March 31st. If the contractor is unable to install cable for the temporary microwave detector due to frozen or full conduits, with prior approval from the Engineer, the Contractor may temporarily span the cable overhead as long as proper clearances over the roadway can be maintained. No additional

compensation shall be provided for microwave detector cable or for any special installation requirements.

At locations where the Contractor deems the pavement condition to be unfit to replace an existing inoperable detector loop with a new loop due to pavement deterioration, the Contractor shall, with prior approval from the Engineer, install a video detection system. The video detection system shall be installed in accordance with the specification "Video Detection System" under Non-Routine Work. The cost of providing and installing the video detection system complete including all necessary connections, monitors, electronics handhole drilling, trench and backfill, unit duct and restoration shall be included in routine maintenance of the traffic signal installation and no extra payment shall be allowed.

10.15 VIDEO DETECTION

At the beginning of the EMC 2011/2012 it is estimated that District 1 will have approximately fifty (50) intersections with video detection in operation. Video detection will increase each year. The Contractor shall provide license software for each of the System Patrolmen who have video detection in their respective area. The System Patrolmen shall be fully instructed in the operation and maintenance of each video detection system.

Two (2) of the video systems have a one mile microwave communications system linked to the Schaumburg IDOT headquarters. The Contractor shall provide qualified personnel who shall be familiar with the operation and maintenance of this system.

At the beginning of the EMC 2010/2012 it is estimated that District 1 will have ninety (90) tilt/ pan/ and zoom video cameras in operation. The Contractor shall provide licensed software for each of the Systems Patrolmen, which have this video in their respective areas. The System Patrolmen shall be fully instructed in the operation and maintenance of these cameras.

10.16 INTEGRATED CLOSED-LOOP TRAFFIC SIGNAL MONITORING SYSTEM (CLMS)

10.16.1 CONTRACTOR RESPONSIBILITIES

The Contractor will, on a daily basis, monitor, review, and maintain the District 1 closed loop monitoring system. Refer to CLMS as described in Article 10.1. The Contractor shall use a local area network (LAN) computer system, with licensed software for each brand of master controller (used in District 1) to monitor the District 1 closed loop signal system. The LAN system shall communicate with each master through individual telephone lines. The LAN shall also be programmed to compare data bases with the Department's LAN at the District Headquarters in Schaumburg. The Contractor shall provide daily and monthly reports updating the status of the CLMS. The Contractor shall also provide licensed master software for all system patrolmen laptop computers.

A copy of the Official District 1 Closed-Loop Data Base shall be supplied to the traffic signal engineer at the termination of this contract. The data base shall also be digitally transferred to the next Maintenance Contractor at the termination of this contract.

10.16.2 DEPARTMENT LAN AND SOFTWARE SUPPORT

The Department shall be responsible for maintaining all Department owned Closed Loop Monitoring hardware.

The Contractor shall provide personnel who can demonstrate competence in the proper operation of all closed loop monitoring programs currently in use by District 1. The Contractor shall provide competent personnel for LAN maintenance and repair as defined in the definition of terms under Article 12.0 for specialty service. All costs to maintain daily communication between the Contractor's LAN and the Department's LAN will be included under routine maintenance.

10.16.3 CONTRACTOR MONITORING DUTIES FOR THE CLMS

Each contract year, the Contractor shall purchase one (1) notebook CLMS Field Monitor which shall become the property of the Illinois Department of Transportation.

Prior to purchasing the Field Monitor, the Contractor shall contact the Traffic Signal Engineer to ensure that the following make, model, and options are still valid and meet the requirements of this specification:

Lenovo ThinkPad SL510 (including carrying case).

- 250 GB memory
- DVD+RW DL
- 10 Hour Use with Three Batteries
- Microsoft Windows 7 Ultimate software with MS Word and Access
- Ethernet Connection
- Cellular wireless ready
- Intel Core 2 Duo Mobile processor T8100 2.1 GHz
- 15.6 LCD DisplayScreen
- USB to serial port converter

All of the above hardware and software are to be delivered and operational to the satisfaction of the Traffic Signal Engineer before the end of the first month of the contract.

10.16.4 RESPONSIBILITIES

The Contractor shall concurrently monitor all Closed Loop Traffic Control Systems maintained by him under this contract on a 24 hour per day, 7 days per week basis. The Contractor's system monitoring functions shall include, but not be limited to, the reception of telephone calls from Closed Loop System Master Controllers and the storing, displaying, and acting upon any reported events, alarms, equipment failures, operational exceptions and programmed data collection. The Contractor shall have sufficient dedicated telephone lines, his own dedicated Close Loop Monitoring System(s) with appropriate software, and qualified electrical technicians to provide for the simultaneous monitoring of all closed-loop traffic control systems being maintained by him under this contract.

The Contractor shall program all Closed Loop Systems, so that he will receive all system alarms, events, and messages on his Central Closed Loop Monitoring System(s). The Contractor shall respond to all alarms, events, and messages and provide the indicated response or corrective action within the time frame specified in the "Response and Follow-up Time Requirements" listed under Article 10.3. The EMC Dispatch Center shall be equipped with the necessary equipment to receive all alarms, events, and messages as described above. Before the end of the first month of the contract, the Contractor shall submit a list of alarms, events, or messages that each brand of Closed-Loop System is programmed to send to the Contractor's dispatch center for approval by the Traffic Signal Engineer.

The Contractor shall maintain the integrity of the timings and programming information contained in the local controllers and the master controllers. The Contractor shall maintain each Closed Loop Traffic Control System in the mode for which it has been setup and programmed (i.e., Traffic Responsive (TRAP), Time-of-Day (TODD), FREE, etc.). The Contractor shall maintain his own data base of all the local and master controller timings, settings and programming

information including graphic displays for intersections and systems. This data base shall be kept by him, at his place of business, for his own use in the normal course of system maintenance. The Contractor's data base shall be the Official District 1 Closed Loop Data Base. This data base shall also include Municipal and County maintained Closed Loop Traffic Control Systems that are on IDOT maintained routes. The Contractor shall insure data base agreement by synchronizing IDOT Schaumburg Headquarters data base with the Official District 1 Closed Loop Data Base.

The Contractor shall provide an Electronic Patrol of each master controller and its local controllers (including municipal and county maintained Closed Loop Traffic Control Systems on IDOT maintained routes) at least once every day, seven (7) days a week. This Electronic Patrol shall be done in addition to any field patrols done as part of Routine Maintenance. The Electronic Patrol shall document that all equipment is working properly and the timings and programming in each system have not changed from their correct values.

In addition, this electronic patrol shall include, but not be limited to, system loop checks (failed, maximum presence, and no activity), local loop checks (phases on recall, locked detectors), loops with system outputs (volume/occupancy checks), failed, Max presence, no activity, master controllers answering, local intersections on line (telemetry checks). Any exceptions found shall be reported to the Traffic Signal Engineer via facsimile by 8:00 AM every work day and corrected within the time frame specified in the "Response and Follow-up Time Requirements" listed under Article 10.3. The format and content required for this facsimile shall be approved by the Traffic Signal Engineer. Any discrepancies shall further be reported in the Closed Loop System Status Report.

All changes to Local or Master Controller programming shall have prior approval of the Engineer. Minor temporary changes to alleviate some sporadic operational anomaly will be acceptable provided it is done by a qualified electrical technician, and reported to the Engineer as soon as practical. It is anticipated that major re-programming will only be brought about through a comprehensive traffic study, optimization of timing effort independent of this maintenance contract. However, the Contractor may be required to effect (program) such timing changes in the closed-loop system masters and/or local controllers. The Contractor shall keep records of all changes to local and master controller data bases with the dates the changes were implemented and who authorized the changes.

The Contractor shall maintain a Closed-Loop System Operational Log accumulating in it the day to day operational information for our Closed Loop Traffic Control Systems. This log shall contain a listing of all program and mode changes that have occurred in each system and any anomalies to normal operation. The Contractor shall monitor this log for any persistent and recurring deviation from normal system operating modes and he shall report them to the Engineer as soon, as is practical. In particular, repeated cycle failures, loss of coordination, excessive pre-emptions or conditions that dictate manually commanded free operation shall be reported. In addition, the Contractor shall verify (at least once a week) that program changes in our traffic responsive Closed Loop Systems are occurring at normal times. This will insure that these systems are not oscillating between programs. This check will be considered part of the operational log. The operational log shall be maintained by the Contractor for the duration of this contract. The last 6 months of this log shall be available for inspection at any time and copies shall be provided the Engineer upon request. The format, content, and method used to keep the Operational Log shall be approved by the Engineer.

The Contractor shall maintain a Closed-loop System Failure Log for all Closed Loop system alarms, events, anomalies, and reported failures. It shall further contain the date, time of occurrence, the corrective action taken, a notation as to the cause, and a record thereon as to the repair time required to correct the malfunction. The System Failure Log shall be maintained by the Contractor for the duration of this contract. The last 6 months of this log shall be available at any time for inspection by the Engineer and copies shall be provided to the Engineer upon request.

The Contractor shall prepare a Closed-loop System Status Report every two (2) weeks. Copies of the System Status Report shall be forwarded to the Signal Engineer and the Signal Systems Engineer on the 1st and 15th of every month. The System Status Report shall describe the status of each closed-loop system being maintained by the Contractor under this contract and a summary of failures and alarms occurring within each system during the two (2) week reporting period. This report shall summarize the information contained in the Closed-loop Operations Log and the Closed Loop Failures Log System Status Report shall in addition highlight any equipment failures that were not attended to, repaired or brought back into operation within the required time frame specified in the Repair Time Table and the reason for failing to meet the specified response/repair time schedule. The report format shall be approved by the Engineer.

The Contractor shall not make any timing or programming changes on any Closed Loop Systems or its components except through qualified electrical technicians.

Where applicable, to insure proper system operation and alarm reporting should the master controller ever go into backup, the Contractor shall maintain a location specific backup program in the backup PROMS of each Master Controller. The backup program in PROM shall duplicate the normal controllers programming as closely as possible. The Contractor shall be responsible for maintaining the backup programming and incorporating appropriate changes whenever normal programming changes are made at a Master or when directed to do so by the Engineer. Should a Master Controller ever need to be removed or replaced, the Contractor shall make the appropriate backup PROM switch with the replacement controller.

One month prior to the contract start date, the Contractor shall supply to the Engineer for approval, his proposal for the Closed Loop Monitoring System to be located at his place of business. The proposal shall include a detailed description of the proposed Closed Loop Monitoring System and a timetable for the installation of the system and components.

The Contractor shall assist consultants who are preparing Signal Coordination and Timing (SCAT) reports for the Department. This assistance shall be limited to a one-time download by the consultant of system timings with a qualified Contractor representative at the system location at the time of the download. Occasional operational questions by the consultants may also need to be answered by the Contractor as well as any required correction of items related to the maintenance of systems. In instances beyond these such as multiple requests for assistance in downloading system timing, programming errors which result in Contractor maintenance intervention, or multiple requests for assistance in programming, the Contractor will be allowed to bill the consultant. An itemized bill, including the date and system number, as well as the reason for the bill shall be submitted to the Traffic Signal Engineer in conjunction with the actual bill being sent to the consultant.

10.17 TRAFFIC SIGNAL INVENTORY

The Contractor shall complete the form "IDOT District 1-Traffic Signal Inventory" for:

- A new traffic signal installation added to the Contractor's maintenance.
- Maintenance of an existing traffic signal installation when it is transferred from another agency to the Department.
- Maintenance of a traffic signal installation, which had been under construction when it is accepted for maintenance by the Department.
- A change in inventory at an existing signal installation.

The Contractor shall provide an updated form with a revised date for all locations being accepted for maintenance even if there is no change in inventory items on the form (the date shall reflect the acceptance of maintenance). The Bureau of Traffic reserves the right to make minor modifications to the form such as adding or deleting items or modifying the format, but without changing the overall scope of the form.

Refer to Article 4.0 for Formal Transfer of Maintenance responsibilities.

The Contractor shall also be responsible for updating and maintaining the Access data base of traffic signal equipment inventory. The inventory shall be compared to field locations and corrections noted and submitted to the Signal Engineer at least once each year.

The Contractor shall record or verify the GPS latitude and longitude coordinates of the signal equipment as listed herein for use in the District's record retention system.

10.18 PAINTING BY OTHERS ON STATE MAINTAINED FACILITIES

Other agencies will be permitted to paint traffic signal equipment, utilizing their own forces, as approved by the Engineer. The Contractor is required to inspect the location, before and after the location is painted, as part of routine maintenance. Maintenance will not be transferred. The Contractor will document dates of painting in the dispatch log. If any damages are observed to IDOT equipment as result of the painting, the Contractor will repair immediately, and recover the expenditures through 3rd party damages. (Refer to Article 4.0 for 3rd party documentation/repair requirements.)

10.19 TRAFFIC SIGNAL GROUNDING AND ELECTRICAL SERVICE UPGRADE

As part of routine maintenance of the Traffic Signal System, the Electrical Maintenance Contractor shall perform a grounding and electrical service upgrade to 200 traffic signal locations annually. The locations to be modified are intended to be designated by the Engineer prior to March 1 of the contract year. It is intended that the Contractor complete the work within the calendar year. In addition to the 200 locations to be modified annually under Routine Maintenance, the Engineer may designate additional locations to be modified. Work at additional locations will be paid as Non-Routine Maintenance. The Contractor shall include a progress report in the monthly routine maintenance work documentation book.

The Contractor is responsible for scheduling the work and for coordinating with the Engineer whenever Engineer-witness functions are required. The Contractor shall also advise the Engineer when each location is complete and shall provide a written certification to that effect. The Engineer reserves the right to require a final inspection of the modification at any or all of the locations certified as complete. Should deficiencies be found upon inspection, a corrective work list will be prepared. If progress of the work is inadequate, or if errors in certified complete work are repeatedly found, the Engineer may initiate withholding of routine maintenance payment.

The traffic signal installations being modified shall be kept operational at all times except as expressly allowed herein or otherwise permitted by the Engineer. The Contractor shall be responsible for all traffic control and temporary provisions required for the work, all at no additional cost to the contract. All cable, conduit, fittings and accessories shall be new. All materials and work shall be in conformance with the requirements of applicable contract specifications and standard details, Special Provisions and Article 250 of the National Electrical Code.

The Contractor shall be responsible for coordination with the Electric Utility as necessary and shall be responsible for reporting any account modifications arising from the work to the Engineer in a timely manner. Although it is anticipated that all service agreements and accounts will remain as-is, if new agreements are required, the Contractor shall facilitate coordination between the Electric Utility and the Engineer, with the Department to sign any appropriate new agreements. Only momentary outage of a traffic signal location undergoing modification will be allowed, and the contractor shall make temporary service connections as necessary to assure continuity of operations as modifications are made.

The work will generally include:

- Replacement of the electric service entrance equipment and cables
- New grounding of the service
- New feeder conductors from the service disconnect to the controller cabinet
- Cabinet grounding modifications
- Extension of equipment ground wires to all poles, posts, handholes, etc.
- Bonding of equipment ground to all exposed metal parts
- Testing and documentation

Replace Electric Service Entrance

The work shall include the removal of the existing service disconnecting means and the service conductors and shall include the furnishing and installing a new pole-mounted service disconnecting means and new service conductors, based on the manner of the existing service. The new electric service disconnect, cables and the service connection shall be in accordance with details included herein.

The pole-mounted electric service box provided for these installations shall be Type A1 (equipped for 240/120V. 3W service, but with space only for the lighting main breaker), figure to be furnished by the Engineer, or unless specified otherwise by the Engineer to meet special requirements of certain locations, such as the proximity of pedestrian traffic, etc.

The pedestal mounted services boxes shall be the same as the pole mounted assembly, but with the following differences:

- The Contractor may re-use (with Engineer's permission) the existing pedestal mounted enclosure, but with new internal equipment as shown in Fig. L-3A. New enclosure, if used, shall be as approved by the Engineer.
- New pedestal-mount enclosures shall be NEMA cast aluminum with integral keyed lock assembly as approved by the Engineer
- The service conductors in the pedestal shall be installed in a liquid tight flexible metal conduit, secured at both ends, with bushing at both ends

Provide New System Ground of Electric Service

The work shall include the installation of a new system ground, connected to the ground bar of the service disconnect, using one or more ground rod grounding electrodes, or other means approved by the Engineer. The system ground shall have a resistance to earth not to exceed 10 ohms without connection to the additional electrodes established at poles or other points at the traffic signal location. The system ground resistance shall be verified by a contractor test, using the fall-of potential method and witnessed and approved by the Engineer, with a record of the test entered by the Contractor and signed by the Contractor and the Engineer. Should more than one electrode be required to establish a low enough resistance, additional electrodes shall be connected to the grid, with re-testing. All ground electrode connections shall be exothermically welded. Ground rods and grounding electrode conductors shall be as specified and detailed.

The service grounded circuit conductor (which may or may not be a system neutral) shall be bonded to the system ground at the service disconnect and shall be isolated from ground throughout the remainder of the electrical distribution.

Extend New Conductors to Controller

A new ground terminal bar shall be installed at the traffic signal control cabinet and this bar shall be bonded to the cabinet enclosure. The work shall include the replacement of the existing feeder and the extension of new feeder conductors from the service disconnect to the traffic signal control cabinet. The cable will be a multi-conductor jacketed cable as specified and it shall include a green-insulated ground wire to bond the service ground bar to the controller cabinet ground bar. The contractor shall confirm the integrity of the existing feeder conduit run, and shall clean the run before installing the new feeder. If the size of the conduit is demonstrated to be inadequate for the new feeder cable or if it is demonstrated as not re-usable for some other reason and no other alternative is feasible, the Engineer will authorize a new feeder conduit run, paid as non-routine work, with all cable work remaining as the Contractor's responsibility at no additional cost to the contract.

Cabinet Grounding Modifications

The Contractor shall confirm the presence of a terminal bar, with suitable terminals, for the grounded circuit conductor (white wire) at the controller cabinet and shall assure isolation of this bar from the cabinet enclosure and other grounded parts. If the existing bar is inadequate or is not isolated properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items. Similarly, the Contractor shall confirm the presence of a ground bar, with suitable terminals, which is bonded to the cabinet enclosure and grounded metal parts. If the existing ground bar is inadequate or is not bonded properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items.

Extension of Equipment Ground

The Contractor shall extend an equipment ground conductor from the ground bar in the controller cabinet to distributed elements of the system, bonding the equipment ground conductor to all handhole frames, handhole covers, metal poles and other enclosures, metal conduit, etc., including any existing supplemental ground rods that may be in place. The Contractor shall assure that good equipment ground continuity and a low-impedance ground return path is established throughout for all exposed metal parts of the installation.

It is not the intent of this work item to require re-cabling of the traffic signal load equipment to achieve grounding. In all cases, a green-insulated ground conductor shall be used whenever possible, and only if conduit space will not accommodate an insulated conductor will a bare conductor be allowed. A common conductor may be employed for multiple load circuit cables in a given conduit, but an equipment ground conductor shall be run with or shall encircle each set of circuit conductors extended from the controller cabinet.

Recognizing the intent to leave existing conductors in place and operational, the Contractor may choose from among identified and prioritized acceptable alternatives to affect the grounding modifications:

- If an existing conduit will accommodate the installation of a ground wire, the ground wire shall be installed within the conduit with the circuit conductors. Existing conductors should only be withdrawn from a conduit run to facilitate pulling of the ground wire if absolutely necessary.
- If an existing metal conduit will not accommodate the required ground wire, and if the Contractor can identify end-to-end electrical continuity of the conduit, the Contractor may bond to the conduit externally in an approved manner to establish ground continuity, thus using the metal conduit as the equipment ground conductor.

- If a given conduit run is demonstrated to be damaged and electrically discontinuous in the presence of the Engineer, and if no other alternative is feasible, the Engineer will authorize a new conduit run, to be paid as non-routine work, with all cable installation to remain part of the grounding modification work at no additional cost to the contract. When a new conduit is installed, an insulated ground conductor must be installed within, together with the circuit conductors, regardless of the ground continuity of the new conduit, and the new conduit shall be appropriately bonded to the equipment ground.

Bonding

The Contractor shall establish equipment ground bonding to the cover frame of every handhole with an approved connection. The Contractor shall establish equipment ground bonding at every metal pole, post, handhole cover, handhole frame, or other enclosure or device, with an approved connection. At poles or post bases, it may be possible to install washers, lugs and extra nuts where extra anchor bolt protrusion allows it. Otherwise, poles may be drilled and tapped and fitted with appropriate ground lugs. Connections at poles and other enclosures shall be pigtailed from splices whenever more than one ground conductor is connected so that ground continuity is not dependent upon ground lug connections. Splices of ground conductors (in lieu of exothermic weld connectors) will be permitted at poles and other such connection points above grade, with splices to be made using suitable copper crimp sleeves and heat-shrink insulated caps as specified.

Testing and Documentation

As noted above, the system ground resistance to earth shall be tested, in isolation from equipment ground extensions from that point. Testing shall be performed by the Contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the Contractor and witnessed by the Engineer.

Special Considerations

Temporary signal installations and other span-wire installations shall be included in the scope of service and grounding modifications. For span-wire installations, the messenger wire shall be employed as an equipment ground conductor and taps shall be made to this wire to extend an equipment ground connection to appropriate exposed metal parts. A service grounding electrode shall be established at the electric service disconnect and a ground rod shall be installed and connected at one pole per quadrant.

10.20 RAILROAD INSURANCE

The Contractor shall obtain railroad protective liability insurance coverage for performing non-routine work relating to the installation of new traffic signal facilities on railroad R.O.W. where the Department has no existing appurtenances, e.g., railroad interconnect, railroad structure mounted traffic devices, etc.

10.21 NON-ROUTINE MAINTENANCE

Refer to Section 2 to review Special Provisions for non-routine work pay items.

10.21.1 NON-ROUTINE WORK IN THE RAILROAD RIGHT-OF WAY

The Contractor shall be responsible for obtaining any necessary permits as required by the railroad for any non-routine work to be performed on the railroad Right-of-Way. The Contractor shall also be responsible to coordinate all activities between the Department and the railroad.

The Contractor shall be responsible for completing any required forms and shall coordinate all activities between the Department and the railroad. Any fees associated with obtaining the permit shall be paid by the Department in accordance with Article 109.05 of the Standard Specifications for Road and Bridge Construction, as modified and noted in Article 5.0.

10.22 GPS RECORDING

The Contactor shall record GPS coordinates of the following electrical components:

- Controller Cabinet
- Electric Service Disconnect
- Fiber Optic Cable Handholes
- PTZ Camera
- Railroad Bungalow (if signal is interconnect to RR warning devices)
- Flashers (including overhead and sign mounted)

Datum to be used shall be North American 1983.

Data shall be provided electronically and in print form. The electronic format shall be compatible with MS Excel. Latitude and Longitude shall be in decimal degrees with a minimum of 6 decimal places. Each coordinate shall have the following information:

1. Description of item
2. Designation or approximate station if the item is not designated
3. Latitude, Longitude (decimal degrees)

Examples:

Description	Designation	Latitude	Longitude
PTZ Camera	PTZ42 or County designation	41.580493	-87.793378
Handhole	HH at STA 234+35	41.765532	-87.543571
Flasher	FS100-TS2341	41.700034	-87.693509
Electric Service	Elec Srv-TS2341	41.602248	-87.794053
Railroad Bungalow	RRB-TS2341		
Traffic Signal Controller	TS 2341	41.651848	-87.762053

Prior to the collection of data, the contractor shall provide a sample data collection of at least six data points of known locations to be reviewed and verified by the Engineer to be accurate within 15 feet. Upon verification, data collection can begin. Data collection can be made as construction progresses, or can be collected after all items are installed. If the data is unacceptable the contractor shall make corrections to the data collection equipment and or process and submit the data for review and approval as specified.

Device and Accuracy

A handheld mapping grade GPS device shall be used for the data collection. The receiver shall support differential correction and data shall have a minimum 2-5 meter accuracy after post processing. The device may also utilize Differential GPS to obtain the specified accuracy.

GPS receivers integrated into cellular communication devices, recreational and automotive GPS devices are not acceptable.

The GPS shall be the product of an established major GPS manufacturer having been in the business for a minimum of 6 years.

The manufacturer and model of the GPS device shall be identified as well as any software used on the device and in postprocessing.

10.23 LOCKS AND KEYS

Each traffic signal cabinet shall be furnished with a padlock that meets the specifications of the weather resistant padlock currently specified for District 1 pump stations. The padlock shall meet the specifications of the weather resistant padlock as specified by the Engineer, equal or better than Master Lock 6125KA. The key number shall be approved by the Engineer prior to the purchase/install. If the equipment is currently locked with a Master Lock 6125KA model the Contractor may replace the cylinder and new key (for Master Lock 6125KA) instead of replacing the entire lock. Railroad interconnected traffic signal controller cabinets shall have a similar key number but different than standard signal cabinets. It is estimated that there are 150 railroad traffic signal cabinets and 2384 standard traffic signal cabinets and 300 UPS cabinets that require padlocks.

10.24 LOGS AND FORMS

A sample of logs and forms as required for this Contract will be available at the Pre-Bid Meeting.

ARTICLE 11.0 -- EXTRA SYSTEMS

11.1 EXTRA SYSTEMS DESCRIPTION

The Extra Systems consist of various types of electrical equipment, at various District 1 locations, including Base Stations, Bridge Monitors, Highway Advisory Radio, Ice Beacons, Matteson Flood Gates, Rest Area, Maintenance Yards, Sign Shops and Facilities, and Weigh Stations. Refer herein for specific electrical items of Contract maintenance. The Contractor shall maintain the equipment at these locations under routine maintenance, unless specified as paid through non-routine maintenance. A list of locations is found in Section 3.

The routine maintenance includes response and investigation of trouble calls, deficiencies and abnormalities, and replacement materials for defective or non-functioning installed items less than \$ 500 each in value. The labor and equipment necessary for transportation, removal and re-installation of the materials, plus shipping, mailing, and handling charges are paid through routine maintenance.

11.2 GENERAL MAINTENANCE RESPONSIBILITIES

The Contractor shall maintain all equipment per requirements as listed in Article 4.0. For certain technical equipment, as noted herein, the Contractor shall contract with a Specialty Service Company for maintenance. The specialty company names and technician qualifications shall be submitted to the Engineer for approval at the Pre-Construction Meeting.

11.3 RESPONSE AND REPAIR TIME REQUIREMENTS

The Contractor shall dispatch qualified personnel to respond to all trouble calls, malfunctions or damage to Extra Systems electrical and mechanical equipment.

LOCATIONS/EQUIPMENT	RESPONSE TIME	SERVICE RESTORATION	PERMANENT REPAIR
Base Stations	1 Hour	4 Hours	Within 24 hours
Movable Bridges	1 Hour	4 Hours	2 Working days
Highway Advisory Sign	1 Hour	24 Hours	7 Working days
Highway Maintenance Yards	1 Hour	24 Hours	7 Working days
Highway Rest Areas	1 Hour	24 Hours	7 Working days
Ice Beacons	1 Hour	4 Hours	Within 24 hours
Sign Shops	1 Hour	4 Hours	7 Working days
Weigh Stations	1 Hour	4 Hours	7 Working days

11.4 HIGHWAY MAINTENANCE YARD AND SIGN SHOP FACILITY LOCATIONS

The equipment under routine maintenance at the maintenance yard facility locations includes all indoor and outdoor lighting and its control equipment, light switches, underground or aerial feeders, indoor and outdoor GFIC outlets, salt dome storage lighting, air compressor, welder, lift motors and pumps, emergency and exit lighting and/or signs, control boxes, motors and pumps for asphalt heating tanks, calcium chloride and brine spray pumps its controllers and electrical equipment, pressure washer pumps, and exhaust fans.

CCTV

The Dan Ryan Maintenance Yard camera is connected to a local monitor. The Rodenburg Maintenance Yard camera on the Communications Tower is a PTZ camera with a local controller and monitor. The Biesterfield Bridge Office PTZ camera is monitored through the IDOT ComCenter. Refer to Article 6.0 for CCTV maintenance requirements.

11.4.1 SEMI-YEARLY INSPECTION

The Contractor shall inspect the IDOT Maintenance Yards and Sign Shops twice per year, once in mid-April to mid-May and again mid-September to mid-October. Items for inspection include indoor and outdoor lighting and its control equipment, emergency/exit lights, light switches, GFI outlets, salt dome storage lighting, and proper electrical operations of lift motors and pumps, asphalt heating tanks, calcium chloride spray pumps its controllers and electrical equipment, pressure washer pumps, and exhaust fans.

During the spring inspection the Contractor shall disconnect the calcium chloride pumps, drain fluids, clean and lubricate. During the October inspection the calcium chloride pumps shall be re-connected, lubricated and checked for proper electrical and mechanical operation.

The X-1 log sheet shall be completed and submitted to the Engineer in the monthly routine work submittal book. Tickets shall be created for any deficiencies found. The Contractor shall perform maintenance repairs of all deficiencies and shall be completed with seven (7) days.

11.4.2 YEARLY SERVICE ENTRANCE AND FEEDER PANEL INSPECTION

The Contractor shall inspect the service entrance and feeder panels at the Maintenance Yards, Rest Areas and Weigh Stations once per year, during mid-September to mid-October. This work is expected to be completed at the same time as the Semi-Yearly Maintenance Yard Inspections.

The X-1 log sheet shall be completed and submitted to the Engineer in the monthly routine work submittal book. Tickets shall be created for any deficiencies found. The Contractor shall perform maintenance repairs of all deficiencies and shall be completed with seven (7) days.

Inspection procedure is as follows:

- A. Clean enclosure and control equipment by blowing out with low air pressure or vacuuming
- B. Check and clean contacts, relays and timers and visually inspect for damage or out of adjustment parts. Remove all dust off of electrical devices and equipment.
- C. Circuit breaker maintenance:
 - Check connections
 - Exercise breaker
 - Check trip setting
- D. Inspect wiring/conductors for overheating and discoloration
- E. Check tightness of wire terminations and connections
- F. Check for proper labeling, provide and install missing labels
- G. Check wire tags/labels, provide and install missing tags or labels
- H. Check fuse disconnects for proper operations, keep fuse clips clean and tight
- I. Check fuses for proper size
- J. Test equipment ground system

11.4.3 YEARLY LIGHTING CLOCK CONTROL INSPECTION

The Contractor shall inspect the lighting control clocks per requirements in Article 7.0.

11.5 MAINTENANCE YARD LIGHTING REPLACEMENT

As part of routine maintenance work the Contractor shall furnish, remove and replace lighting fixtures, conduit, junction boxes, and remove and replace wiring conductors at two (2) locations. Lighting inside the work areas shall be replaced or installed up to a mounting height of 20 feet.

The fixture mounting accessories, appurtenances, and equipment required are incidental to this work as well as the following new materials:

- Light Switches
- Motion Sensor/Detectors
- Emergency Lights/Exit Light Fixture

The quantities shown below are based on existing record drawings. The Contractor shall meet with the Engineer in March, 2011 to discuss the lighting replacement and the Engineer shall provide the existing record drawing along with a proposed layout of new fixtures. By May 2011

the Contractor shall submit to the Engineer for approval, complete manufacturer's product data and shop drawings. The work is to be completed by August, 2011.

The Contractor is responsible for scheduling the work and for coordinating with the Engineer whenever Engineer-witness functions are required. The Contractor shall also advise the Engineer when each location is complete and shall provide a written certification to that effect. The Engineer reserves the right to a final inspection of the lighting replacement work at any or all of the locations or equipment certified as complete. Any deficiencies found upon inspection, a corrective work list will be prepared and provided to the contractor for repairs and replacement. The Contractor shall provide a progress report in the monthly routine work submittal book.

The two (2) locations to be modified in Year 2011:

XM6175 - Landscape Yard

- Remove seventy (70) fixtures
- Furnish and Install forty seven (47) fluorescent fixtures, eight (8) ft., TEJS (Lithonia Lighting Industrial, or better) with two (2) lamps
- Furnish and Install thirteen (13) fluorescent fixtures, four (4) ft., EJS (Lithonia Lighting Industrial, or better) with two (2) lamps
- Furnish and Install ten (10) fixtures on 2' x 4' suspended ceiling area for office
- Furnish and Install five (5), 15 Amps, voltage as required, single pole on/off switches
- Remove eight thousand (8,000) ft. of wire
- Furnish and Install ten thousand (10,000) ft. of up to # 10 THWN wire
- Furnish and Install 5 occupancy sensors
- Furnish and Install two hundred (200) ft. of one inch rigid conduit

XM6115: Bishop Ford Maintenance Yard

- Remove sixty (60) existing fixtures
- Furnish and Install thirty nine (39) fluorescent fixtures, eight (8) ft, TEJS (Lithonia Lighting Industrial, or better) with two (2) lamps
- Furnish and Install four (4) fluorescent fixtures, four (4) ft., EJS (Lithonia Lighting Industrial, or better) with two (2) lamps
- Furnish and Install in Mechanics bay, ten (10) with four (4) lamps and three (3) with six (6) lamps fluorescent fixtures, IBZ (Lithonia Lighting I-Beam Fluorescent High Bay Lighting, or better)
- Furnish and Install fifteen (15), 15 Amps rated, voltage as required on/off switches as specified
- Furnish and Install (two) 2, three (3) – way, 15 Amps, voltage as required on/off switches
- Remove three (3) "EXIT" lights
- Furnish and Install seven (7) "EXIT" Lights with battery back-up as specified
- Furnish and Install fifteen hundred (1500) ft. of one (1) in. rigid conduit
- Remove ten thousand (10,000) ft. of wire
- Furnish and Install fifteen thousand (15,000) ft. of up to # 10 THWN wire
- Remove seven (7) fixtures from the Wash Bay
- Furnish and Install eleven (11), 4 ft. fixtures in the Wash Bay, must be water resistant, high impact
- Remove two (2), 6-circuit panels from Tire Storage Area
- Furnish and Install new 20 Circuit, Square D, bolt- in type to replace 2, 6-circuit panels

If the Contract is renewed for a second year, the two (2) locations to be modified for 2012:

XM6160: I-57 Maintenance Yard

- Remove twenty two (22) existing fixtures
- Furnish and Install fifteen (15) fluorescent fixtures, eight (8) ft., TEJS (Lithonia Lighting Industrial, or better) with two (2) lamps

- Furnish and Install four (4) fluorescent fixtures, IBZ (Lithonia Lighting I-Beam Fluorescent High Bay Lighting, or better) with four (4) lamps
- Furnish and Install seven (7), 15 Amps rated, voltage as required On/Off switches
- Furnish and Install two hundred (200) ft. of one (1) in. rigid conduit
- Remove three thousand (3000) ft. of wire
- Furnish and Install four thousand (4000) ft. of up to # 10, THWN wire

XM6105 – Alsip Yard

- Remove one hundred (100) fixtures
- Furnish and Install fifty eight (58) fluorescent fixtures, eight (8) ft., TEJS (Lithonia Lighting Industrial, or better) with two (2) lamps
- Furnish and Install twelve (12) fluorescent fixtures, four (4) ft., EJS (Lithonia Lighting Industrial, or better) with two (2) lamps
- Furnish and Install eight (8) fluorescent fixtures in cold storage building utilizing outdoor ballast
- Furnish and install new Panels and Interior breakers:
 1. Panel SD-8 (40 circuits) in Bay # 1, replace four (4) double breakers
 2. Panel SP-10, thirty (30) circuits in Bay # 5, new interior
 3. Panel SP-5, thirty (30) circuits, new interior
 4. Panel SP-3, forty (40) circuits in Mechanics Bay, new interior
- Remove twelve thousand (12,000) ft. of wire
- Furnish and Install fifteen thousand (15,000) ft. of up to # 10 THWN wire
- Furnish and Install thirteen (13) occupancy sensors
- Furnish and Install seven (7), 15 Amps, voltage as required, single pole on/off switches
- Furnish and Install two hundred (200) ft. of one (1) in. rigid conduit
- Furnish and Install cover on all open junction boxes
- Furnish and Install fifteen (15), 20 Amps outlets as specified

The contractor shall notify the Engineer upon completion of the work and shall conduct a walk through with the Engineer for inspection and measurement of material installed. Material that is installed shall be counted, it is the Engineers discretion to see that any material left, shall be stored in state stock or installed at a different location.

11.6 HIGHWAY REST AREA LOCATIONS

The equipment under routine maintenance at the rest areas includes exterior and interior lighting (plus lighting inside public washrooms), emergency/exit light and all panels, controls, outlets and well pump.

Monthly Inspection

The lighting night-rider shall inspect the rest areas exterior and interior lighting on the monthly patrol. Refer to patrol procedures as found in Article 4.0.

Yearly Lighting Clock Control Inspection

The Contractor shall inspect the lighting control clocks per requirements in Article 7.0.

Yearly Service Entrance and Feeder Panel Inspection

The Contractor shall inspect the service entrance and feeder panels at the Rest Areas once per year, during mid-September to mid-October. Refer to Article 11.4.2.

11.7 ICE BEACONS

The equipment under routine maintenance at the ice beacon locations includes SCADA radio receiver and electrical control apparatus, cabinet, conduit wiring, flashing amber beacons (signal heads), and all other equipment and appurtenances.

Monthly Inspection

The Contractor shall inspect each Ice Beacon location, once per month, in the last week of the month, to assure proper operation of their intended service. The inspection shall include checking radio equipment for clarity, proper beacon operation, verifying data burst, dusting or cleaning equipment as necessary, and/or opening each controller and radio enclosure and cleaning if necessary. Data shall be recorded on log form X-3, H.A.R. and Ice Beacon Monthly Inspection. The date of the inspection shall be listed on the daily agenda. The Contractor shall submit a copy of the X-3 log form to the Engineer in the monthly routine work submittal book. The Contractor shall create tickets for any problems found.

11.8 WEIGH STATIONS

The Weigh Station equipment under routine maintenance includes electronically operated traffic control devices, traffic control flashers, height detector equipment and truck waiting warning devices, traffic signal heads, traffic signal posts, height detector poles, loop detectors, handholes, vehicle amplifiers, overheight detectors, foundations, cable, conduit, CCTV cameras, fiber optic transceiver, monitors, inside and outside lighting system including lamp, cable, conduit and panel, lenses, reflectors, shields, poles, mast arms, ballasts, decals, control devices, radios, lighting cabinets, fenced enclosures, access gates, above ground cable splice boxes, exposed conduit, unit duct, breakaway devices, sump pump in wet pit area and appurtenances. Also included is Weigh Station "open/closed" sign equipment which consists of fiber optic message signs, interconnecting cables, controllers, including INTRAC radio, and power sources all located on various expressways. Excluded from routine maintenance are weigh scales and repair of circuit boards, relays, or cabinets associated with the weigh scales.

Monthly Inspection

The Contractor shall inspect each weigh station installation using the WS patrol inspection log form X-4 and perform the following:

- Replace all burned out lamps and damaged sockets
- Check lighting in scale pit
- Replace damaged, discolored, cracked or peeling signal lenses
- Repair or replace any damaged signal posts, foundations, signal heads, cable, conduit and over height vehicle detector posts from any cause whatsoever
- Check alignment of signal heads
- Check alignment of overheight vehicle detectors
- Check operation and condition of loop detectors
- Align all signal posts
- Identify vehicle detector loops in need of replacement
- Schedule loop resealing as required (create EMCMS Ticket)
- Check proper operation of the CCTV System and monitors filing washer fluid for proper camera operation. The wipers on the cameras at the WS80OB Weigh Station, I-80 outbound, west of 80th Ave, require refilling twice a month.)
- Tickets shall be created for any problems found. The log form XW-1, shall be completed and submitted in the routine maintenance monthly submittal book.

Yearly Lighting Clock Control Inspection

The Contractor shall inspect the lighting control clocks per requirements in Article 7.0.

Yearly Service Entrance and Feeder Panel Inspection

The Contractor shall inspect the service entrance and feeder panels at the Weigh Stations once per year, during mid-September to mid-October. Refer to Article 11.4.2.

Yearly OPEN/CLOSED Sign Relamp

The Contractor shall relamp all OPEN/CLOSED signs during the month of March under routine maintenance and submit form X-5 with the list of signs relamped in the monthly routine work submittal book.

11.9 BASE STATIONS

The Hillside and Rodenburg Maintenance Yards have base station equipment to be maintained which includes a back-up generator, transfer switch, electrical service feeder cable, distribution panels, gas detector systems, doors, buildings, roofs, fencing, gates, windows, locks, flashing beacons, PS SCADA system repeater radio, AEGIS alarm systems, antenna, antenna line, back-up battery, diagnostic board, and various other equipment and appurtenances. Base Stations shall be maintained as specified in Article 6.0 and Generators shall be maintained as specified in Article 8.0.

11.10 MOVEABLE BRIDGE MONITORING

The equipment under maintenance includes closed circuit television cameras, monitors, generators and transfer switches, alarm panel and appurtenances, interconnecting coaxial cables, navigation lighting, highway lighting on the bridge, river traffic controls, conduit wiring, circuit breakers, sump pumps, incoming electrical service feeder cable and all appurtenances located on various moveable bridges in the Illinois waterway in or near to Joliet, Illinois.

Monthly CCTV Inspection

A certified closed circuit video service technician shall perform a monthly inspection of the Bridge Monitoring CCTV and associated equipment at all locations and list problems found, or no problems found on form XB3. The IDOT Moveable Bridge Office Engineer shall receive the original copy of the technician's monthly inspection, and the Contractor shall submit a copy to the Engineer in the monthly routine submittal book. The lighting night-rider shall inspect the bridge and navigation lighting on the monthly patrol (refer to patrol procedures in Article 4.0.).

11.11 HIGHWAY ADVISORY SIGN LOCATIONS

The equipment under maintenance at the locations includes flasher/load relays and all electrical control apparatus, cabinet(s), conduit wiring, circuit breakers, flashing amber beacons (signal heads), foundations, incoming electrical service feeder cable, solar panels, batteries, and all other equipment and appurtenances.

Monthly Inspection

The Contractor shall inspect each H.A.R. Sign location, once per month, in the last week of the month to assure proper beacon operation. The Contractor shall replace any lights and/or clean equipment as necessary. Data shall be recorded on log form X-3, H.A.R. and Ice Beacon Monthly Inspection. The date of the inspection shall be listed on the daily agenda. The Contractor shall submit a copy of the X-3 log form to the Engineer in the monthly routine work submittal book. The Contractor shall create tickets for any problems found.

Radio Repairs

If the Contractor finds the radio defective, the Contractor shall notify the Engineer via email so it can be referred to the radio maintenance contractor for repair. The Contractor shall provide system access for the radio maintenance contractor.

11.12 MATTESON FLOOD WARNING SYSTEM

The Contractor shall respond to emergency service requests and perform occasional scheduled inspections of Department owned equipment at the Mattson Flood Warning System in Mattson, IL. The Contractor shall provide the labor, equipment and material to perform repairs, the contractor will be paid through non-routine maintenance for material in excess of \$500.

Located at Governors Hwy @ 214th St. and Governors Hwy @ 219th St., the flood warning system consists of the following equipment:

- Four (4) Solar Assisted 12 Flashing Beacons with two line message board
- Two (2) High water sensor system
- Two (2) Radio signal based systems
- Two (2) Cellular based systems
- Four (4) 64'W X 3'H Barricade gates
- Two 14' Steel poles with foundation
- Four (4) Mast arm assembly and pole with foundation

When notified by the ComCenter or by a police agency that an incident has occurred at the location, a patrolman shall immediately be dispatched to the location by the EMC Dispatch Center. Incidents may include, but are not limited to:

- All motorist caused damage
- Malfunctions which suspend normal operations
- Intrusion alarms
- Power outages
- Live exposed voltage cables
- Changeable message signs
- Gates laying in roadway
- Failures of network (telephone, & radio)
- Events which pose a threat to safe, timely operations

The dispatched personnel shall arrive at the relevant system location within sixty minutes of notification of the incident, to assess and troubleshoot the system and/or to make the system operational. The defective equipment shall be permanently repaired as soon as possible, within 24 hours, unless approval is given by the Engineer. The Engineer shall be notified of any response by Contractor personnel.

11.13 SCHEDULED WORK CHART

Art. No.	Form #	Equipment to be Inspected	No. of Locations	Frequency/Month	Submittal
11.4.1	X-1	Maintenance Yard Inspections	34	Mid April/May & Mid Sept/Oct	RWSB
11.4.2	X-2	Service Entrance & Feeder Panel	34	Mid Sept/Oct	RWSB
11.4.3	L-2	Lighting Clock Control (Maint. Yds.)	34	Mid Sept/Oct	RWSB
11.6	L-2	Lighting Clock Control (Rest Areas)	2	Mid Sept/Oct	RWSB
11.8	X-4	Weigh Stations	12	Monthly	RWSB
11.8	X-5	Weigh Station Open/Close Sign Relamp	194 Lamps	Yearly/March	RWSB
11.9	P-10	Generator	2	Monthly	RWSB
11.9	P-10	Generator, Comprehensive	2	Yearly/October	RWSB
11.10	XB-3	Moveable Bridge CCTV	6	Monthly	RWSB
11.7/11	X-3	H.A.R. & Ice Beacons	25	Monthly	RWSB

11.14 NON-ROUTINE MAINTENANCE PAY ITEMS

Refer to Section 2 Special Provisions for a list of Non-Routine Pay Items which may be authorized for work on the Extra Systems.

11.15 LOGS AND FORMS

A sample of logs and forms as required for this Contract will be available at the Pre-Bid Meeting.

ARTICLE 12.0 – DEFINITIONS, SPECIFICATIONS & STANDARDS

Definitions of Terms User Herein:

AEGIS District 1 Dial-up Pump Station Alarm System

ANSI American National Standards Institute

ASMC Advanced Systems Maintenance Contract

ASSIGNED PERSONNEL

When used herein shall refer to Contractor personnel whose daily work shall normally be devoted to a particular electrical system as noted herein. Assigned personnel are not solely dedicated to performing EMC 2011/2012 work.

ATMS Advanced Traffic Management System

AVL Automatic Vehicle Locator

CLEAR When used herein describes ticket terminology, the departure of the Contractor personnel from the initial response to the site of a reported incident of damage or trouble on system equipment after verifying that the highway is safe for the motoring public

CLMS Closed-Loop (Traffic Signal) Monitoring System

CMS Changeable Message Sign

COMCENTER Illinois Department of Transportation, District 1 Communications Center

DAMAGED EQUIPMENT

Any piece of equipment owned or maintained by the Department that is no longer capable of functioning as originally designed, or as since modified, or any piece of equipment that has deteriorated sufficiently in the opinion of the Engineer so that failure is imminent, or for which safety could be a concern

DEDICATED PERSONNEL

When used herein shall refer to Contractor personnel whose daily work shall be devoted solely to the EMC 2011/2012

DBE Disadvantaged Business Enterprise

DID Direct Inward Dialing

DISPATCH CENTER

The Contractor's 24/7 dispatching area as required herein, also referred herein as the EMC Dispatch Center

DISTRICT 1 IDOT Department of Transportation area defined as Cook, DuPage, Kane, Lake, McHenry, Will, and a portion of Kendall Counties

DMS Dynamic Message Sign

EFO Illinois Department of Transportation, District 1, Bureau of Traffic, Electrical Maintenance Field Office, 101 W. Center Ct., Schaumburg, IL 60196

ELU Equivalent Location Unit, the result for bidding purposes, of a total of locations per system multiplied by an assigned unit factor

EMC Electrical Maintenance Contract or the Electrical Maintenance Contractor

EMCMS Electrical Maintenance Contract Management System with emergency call-out database

EMERGENCY A condition which is a hazard to the public, or is designated by the Engineer to be a hazard of such severity that life and property are endangered and which requires immediate corrective action

ENGINEER IDOT Resident Engineer on this Contract or authorized representative

EQUIPMENT SERVICE

Refers to the servicing and/or restoration of any equipment to normal operating condition and appearance necessitated by service equipment wear-out, failure, damage or loss

FIU Field Interface Unit, sometimes called an FEP, Front End Processor

FROM ANY CAUSE WHATSOEVER

When used herein shall include any and all causes except those resulting in extensive damage from declared area wide disasters such as fires and floods, acts of the public enemy, or an Act of God. (The area wide disaster exclusion will be valid only for the time period and area as defined by a Governor's Disaster Declaration.) Damages due to lightning are not included in this exclusion.

GCM GATEWAY

Gary-Chicago-Milwaukee Corridor Transportation Information Network

GENERAL BILLING INVOICE

Refers to a daily invoice created by the Contractor for time and material work or additional services rendered or work performed for, or on behalf of, a 3rd party, on any part thereof or concerning System installations and equipment owned by IDOT which is included under the scope of maintenance of this contract. Examples would include 3rd party construction related damage repair invoices, work for 3rd party permits involved with construction in the state ROW, 3rd party invoicing for additional cable locate services, etc.

GUI Graphical User Interface

IDOT INSPECTOR

Employees of the Illinois Department of Transportation assigned duties by the Engineer

IMMEDIATE CORRECTIVE ACTION

Refers to all activity necessary to restore the safe operating integrity of a system or system element, without delay

IMSA International Municipal Signal Association

ISP/CMS Illinois State Police Area in a State of Illinois Central Management Service facility

KNOCKDOWN (KD)

Refers to damage which results in the knockdown of a light pole, luminaire, or cabinet, a traffic signal or cabinet, a surveillance signal or cabinet, or camera pole and camera

LIGHT TOWER Also known as High Mast Lighting Tower

LIGHTING INSTALLATION

One or more lighting units powered from one common electric service

LIGHTING SCADA

The standard specifications for the Illinois Department of Transportation, District 1, Lighting System Supervisory Control and Data Acquisition System

LOCATION

For purposes of this Contract, a single defined locally-operational sub-portion of a defined system, usually having a unique electric service or service combination, operated from a unique control cabinet, building, etc., and having a unique system identifier in the Contract.

MANUAL ON TRAFFIC CONTROL DEVICES (M.U.T.C.D.)

State of Illinois "Manual on Uniform Traffic Control Devices for Streets and Highways"

MOSCAD

Motorola Supervisory Control and Data Acquisition

MOSYS

Motorist Outreach System, a computer system located at the Traffic Systems Center and ComCenter, which controls Dynamic Message Signs at various expressway locations

MOTORIST CAUSED HIGHWAY DAMAGE (MCHD) REPAIR FUND

A budgeted, reappropriated item in the state budget from which the Illinois Department of Transportation is given the replacement costs for damaged system equipment caused by motorists, if a police accident report links the motorist to the accident.

NAGIOS

Nagios is a software monitoring system that enables organizations to identify and resolve IT infrastructure problems before they affect critical business processes

NEC

National Electrical Code

NEMA

National Electrical Manufacturers Association

NON-DEDICATED PERSONNEL

When used herein shall refer to Contractor personnel whose daily work priority is the EMC 2010/2011, but whose duties may include other similar type work for the Contractor, but not within the requirements of the EMC.

NON-ROUTINE WORK

Non-routine work shall refer to all maintenance work which is not included under routine work, but which is authorized and paid separately. IDOT is under no obligation to issue authorizations for non-routine work. Methods of payment include use of contract pay items, established agreed prices, or other force mechanisms.

NORMAL WEATHER

Time during which regular dispatch operations continue; no storm alert procedures in effect.

OFF MAINTENANCE

Term used to define a system location which is not being maintained by the state's maintenance contractor

ON MAINTENANCE

Term used to define a system location which is being maintained by the state's maintenance contractor

OSHA

Occupational Safety Health Administration

PATROLMAN Defines an electrician, who is assigned regular electrical system patrol and street maintenance response duties by the Contractor. Patrolmen have the responsibility for inspecting and servicing a pre-assigned select group of installations in accordance with a defined regular time schedule. The assigned installations may be from any one (1) or all, of the Electrical Systems included under the overall scope of the Contract.

PAY MEETING

Meeting normally held on the second Thursday of each month, to which the Contractor brings the monthly invoice for the payment of the reconciled quantities of routine maintenance work from the prior month.

PERMANENT REPAIR TIME

Amount of time from initial notification to the Contractor until the time permanent (non-temporary) repairs are made

PLC Programmable Logic Control

POTS Plain old telephone service

PLNC Private line telephone service which provides a direct connection between two points through an automatic ring signal at one end when initiated at the other.

PS Pump or Pumping Station

PS-SCADA The standard specifications for the Illinois Department of Transportation, District 1, for Pumping Station Supervisory Control and Data Acquisition System

QA/QC Quality Assurance/Quality Control

RACS IL 38 (Roosevelt Rd) Ramp Access Control System

RAMP When used in context of the REVLAC system, it refers to an entire reversible lane entrance ramp, including, but not limited to, signs, outside gates, barrier, inside gates, and/or the highway pavement that transitions from one roadway element to another. In this Contract, it may also refer to all access control equipment and systems associated with a particular ramp location.

REGION 1 Area within Cook, DuPage, Kane, Lake, McHenry, Will, and a portion of Kendall Counties (also termed District 1)

RESPONSE TIME

Amount of time from the initial notification to the Contractor until a repair person physically arrives at the location.

REVLAC Reversible Lane Access and Control System for the Kennedy Expressway

ROUTINE MAINTENANCE

Refers to all work required to staff, equip, patrol, inspect and maintain electrical systems, whole and operational, at locations as defined herein, except for work specifically excluded from routine maintenance coverage and paid separately as non-routine maintenance work

RUS Rural Utilities Service, USDA

SALVAGE Material/equipment which has been removed from the installed location, inspected for quality, and re-stored in State Stock for further use if directed by the Engineer

SCADA Supervisory Control and Data Acquisition System

SEOC State Emergency Operations Center

SERVICE RESTORATION TIME

Amount of time from the initial notification to the Contractor until the time the system is safe and operational. (In cases of motorist caused damage, when the undamaged portions of the system are operational.)

SPECIALTY SERVICE

Specialty Service, or Specialty Service Work shall refer to work performed by entities other than the electrical maintenance contractor who may not be pre-qualified subcontractors but whose services are necessary because of specialized equipment, specialized expertise or the maintenance restrictions on a particular piece of electrical system equipment. Examples of specialty service entities include traffic signal control equipment and cabinet repair, motor repair shops, pump re-build shops, communication and/or electronics repair shops, software programmers/developers, manufacturer's authorized repair agents and similar service providers. Such work is not restricted to in-shop work and such services may be field-performed. Such services will not be considered as materials.

STANDARD SPECIFICATIONS

Illinois Department of Transportation's "Standards Specifications for Road and Bridge Construction"

STATE STOCK

When used herein refers to stocks of materials and equipment which are state owned, are to be kept separate from the Contractor's materials and equipment, and shall be used exclusively for the Department's installations and systems.

STORM ALERT

A communication issued by the IDOT ComCenter, as provided by its weather service. Upon receipt of this report, the EMC Dispatch Center storm alert procedure goes into effect.

SYSTEM

When used herein refers to any or all the Electrical Systems covered by this Contract including Advanced System, Lighting and Sign Illumination System, Traffic Signal System, Surveillance/DMS Systems, Pump Station System and Extra Systems.

SYSTEM ENGINEER

When used herein refers to IDOT Engineers in charge of maintenance for a particular electrical system for a designated IDOT Bureau.

THIRD PARTY Any entity other than IDOT or the Contractor

TICKET

Maintenance input record of the EMCMS which is used by the Contractor to record various types of malfunctions, failures, damages, knockdowns, vandalism, theft or various other concerns relating to safety matters and/or the reported follow-up response information as necessary to make temporary and/or permanent repairs to restore and/or assure that the system equipment is operating in a normal manner. A ticket consists of various entry screens; dispatch, field response, crew repair follow-up, MCHD repair log, and 3rd party damage information.

TRAFFIC SPECIFICATIONS

The Illinois Department of Transportation's "Standard Specifications for Traffic Control Items", and "Keeping the Expressway Open to Traffic".

TSC The Illinois Department of Transportation, District 1, Bureau of Traffic, Traffic Systems Center, 445 W. Harrison, Oak Park, IL 60304

TSC SPECIFICATIONS

The Illinois Department of Transportation's "Standard Specifications for Traffic Control Items" which includes current design standards for the traffic surveillance system

UPS Uninterruptible Power Supply

V.A.R. Value Added Reseller

WEEK A period of seven (7) consecutive calendar days. Any multiple of this term shall mean a corresponding multiple of number of calendar days.

WORKING DAY

The definition of a working day shall be in accordance with Article 108.04 of the Standard Specifications, with the exception that working days may be charged throughout the entire year.

YARD Any District 1 maintenance yard, sign shop, or other field facility

24/7 Refers to operations required twenty-four hours per day, seven days per week.

All definitions in referenced publications and standards shall apply, except as may be modified herein.

SPECIFICATIONS AND STANDARDS

The latest issue, at the bid date, of the following standards, including subsequent additions or revisions made prior to the bid date, shall apply to all work, materials and equipment furnished and installed under this Contract. In case of conflict with any or parts of the standards listed below the Special Provisions contained herein shall take precedence and shall govern. In case of conflict between referenced standards, the most stringent as determined by the Engineer, shall take precedence and shall govern.

ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS

- Standard Specifications for Road and Bridge Construction, current version
Note: Article 801.02, Standards of Installation shall apply to all systems under this Contract and is not limited to Lighting.
- Design Manual Section 3-600 published on Highway Lighting
- Flaggers' Handbook
- Highway Standards
- Manual on Uniform Traffic Control Devices
- Accommodating Utilities on Rights-of-Way of IL. State Highway System
- Recurring Special Provisions for Traffic Signals, Road and Bridge
- Special Provisions for Special Non-RCRA Waste and RCRA Hazardous Waste Working Conditions
- BDE Special Provisions
- Standard Specifications for Traffic Control Items
- Supplemental Construction Specifications and Recurring Specifications, Current Version

IDOT DISTRICT 1 - STANDARDS AND SPECIFICATIONS

- Confined Entry Space Policy
- District 1 Highway Standards
- Freeway Details Freeway Entrance and Exit Ramp Closure Details TC-8

- Traffic Control Details for Freeway Shoulder and Partial Ramp Closures TC-17
- Micro Computer Management Manual
- Permit Specifications Governing Permit Work on State Right-of-Way
- Recurring Traffic Signal Specifications
- Recurring Special Provisions for Roadway Lighting
- Resident Engineers Construction Guide for Electrical Equipment Construction on State Highways
- Standard 2308-4 (Day or Night Moving Operations)
- Standard Specifications for Electrical Maintenance Contract Management System
- Standard Specifications for the Emergency Data Acquisition System
- Standard Specifications Integrated Closed-Loop Traffic Signal Monitoring
- Standard Specification for Pump Station Supv. Control/Data Acquisition System
- Standards for Roadway Lighting by Permit on State Routes
- Standard Traffic Signal Design Details
- Traffic Signal Plan Preparation and Design Guide
- Traffic Surveillance Special Provisions & Traffic Surveillance Typical Drawings
- Keeping the Expressway Open to Traffic

NATIONAL STANDARDS AND SPECIFICATIONS

- An Informational Guide for Roadway Lighting, published by American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Washington, DC 20001
- Insulated Cable Engineers Assn. and Underwriters Laboratories publications when applicable for cable and other materials
- National Electrical Manufacturers Association Standards, American National Standards Institute, where applicable, for signals, lamps, ballasts, and other accessories
- American National Standards Institute, where applicable, for ballasts, and other accessories
- ASTM Standards for materials
- All applicable manuals and policies of FHWA
- American National Standard Practice for Roadway Lighting, published by Illuminating Engineering Society of North America, 120 Wall St., 17th Floor, New York, NY 10005, Phone (212-248-5000)
- National Electrical Code, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269, approved by the American National Standards Institute, Publication #ANSI/C2, published by IEEE, 345 E. 47th Street, New York, NY 10017
- Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, an AASHTO Publication
- Institute of Traffic Engineers Technical Report No. 1 (A Standard for Adjustable Face Vehicular Traffic Control Heads)
- Emergency Response Guidebook by U.S. Dept. of Transportation, latest version, for further assistance call National Response Center (NRC) 1-800-424-8802

- Hazardous Materials Regulations, Hazardous Materials Transportation Uniform Safety Act of 1990, Hazardous Materials Regulations and Motor Carrier Safety Regulating by U.S. Department of Transportation
- OSHA, all applicable regulations
- RUS, all applicable regulations
- IMSA Standards & manuals
- Federal Communications Commission

ARTICLE 13.0 – TABLES AND CHARTS

**COMPARISON OF MAINTAINED LOCATIONS
TO EQUIVALENT LOCATION UNITS**

	2010		2009	
	Loc. On-Maint.	ELU for Payment	Loc. On-Maint.	ELU for Payment
Jan.	4026	4043	4041	4012
Feb	4025	4043	4008	3979
Mar	4021	4041	4017	3980
Apr	4004	4031	4017	3979
May	4026	4007	4025	3990
Jun			4025	3992
Jul			3995	3963
Aug			4010	3977
Sep			3983	3955
Oct			4006	3999
Nov			3994	4003
Dec			4014	4028
Average:		4033	4011	3988

	2008		2007	
	Loc. On-Maint.	ELU for Payment	Loc. On-Maint.	ELU for Payment
Jan.	4012	3994	3950	3942
Feb	4016	3998	3973	3965
Mar	4000	3983	3960	3953
Apr	4004	3987	3952	3940
May	3998	3979	3941	3927
Jun	4002	3989	3960	3948
Jul	4001	3982	3974	3964
Aug	4011	3991	3976	3958
Sep	4000	3975	3979	3963
Oct	4013	3984	3980	3967
Nov	4017	3986	3987	3976
Dec	4026	3996	4002	3993
Average:	4008	3987	3970	3958

ALL SYSTEMS -- TICKET HISTORY

	Advanced System	Lighting System	Pump Stations	Surveillance	Traffic Signals	Extra Systems	TOTAL
2009	344	865	524	1024	6280	299	9336
2008	437	1113	600	1142	6935	342	10569
2007	419	1109	654	1004	6769	325	10280
2006	361	1110	682	911	6057	212	9333
2005	<u>216</u>	<u>1095</u>	<u>622</u>	<u>1025</u>	<u>6158</u>	<u>220</u>	<u>9336</u>
Avg:	355	1058	616	1021	6440	280	9771

The above information is provided from data submitted by past Contractor(s) and is provided for information purposes only.

TICKET TYPE KEY FOR FOLLOWING TICKET HISTORY:

- CT: Cable Trouble
- DA: Damage
- EQ: Equipment Problem or Malfunction
- GB: 3rd Party Billing
- ID: IDOT Request
- LP: Loop Problem
- MC: Motorist Caused Damage
- OM: Off-Maintenance
- OT: Multiple Outage
- SO: Single Outage
- UT: Utility Problem
- VO: Void
- WR: Work Request by 3rd Party

TICKET HISTORY BY YEAR -- BY SYSTEM

2009	<u>L</u>	<u>P</u>	<u>S</u>	<u>I</u>	<u>X</u>	2009 <u>TOTAL</u>
CT	12			68	1	81
DA	5		17	5	1	28
EQ	240	382	652	2942	235	4451
GB	17		1	83	2	103
ID	5				3	8
LP			56	566		622
MC	341	1	57	445	7	851
OM	74	1	1	49	1	126
OT	29		1	10	1	41
SO	36	2	220	1530	30	1818
UT	97	138	19	574	13	841
VO	7			6	2	15
WR	2			2	3	7
TOTAL:	865	524	1024	6280	299	8992

TICKET HISTORY BY YEAR -- BY SYSTEM

2008	<u>L</u>	<u>P</u>	<u>S</u>	<u>I</u>	<u>X</u>	2008 <u>TOTAL</u>
CT	16		2	101	1	120
DA	3		37	9	2	51
EQ	343	432	775	3526	234	5310
GB	13		4	138	1	156
ID	4				7	11
LP			24	504		528
MC	460		83	588	6	1137
OM	65		2	61		128
OT	13			10	4	27
SO	30	1	207	1162	43	1443
UT	148	167	8	825	18	1166
VO	5			10	3	18
WR	13			1	23	37
TOTAL:	1113	600	1142	6935	342	10132

The above information is provided from data submitted by past Contractor(s) and is provided for information purposes only.

TICKET HISTORY BY YEAR -- BY SYSTEM

						2007
2007	<u>L</u>	<u>P</u>	<u>S</u>	<u>I</u>	<u>X</u>	<u>TOTAL</u>
CT	11			72		83
DA	8	4	24	15	4	55
EQ	433	455	649	3243	199	4979
GB	16		1	86	5	108
ID	1				2	3
LP			13	410		423
MC	374	2	91	665	7	1139
OM	82	8	1	62		153
OT	2			11	4	17
SO	41	3	191	1246	64	1545
UT	131	182	33	950	20	1316
VO	4		1	6	5	16
WR	6			3	15	24
TOTAL:	1109	654	1004	6769	325	9861

TICKET HISTORY BY YEAR -- BY SYSTEM

						2006
2006	<u>L</u>	<u>P</u>	<u>S</u>	<u>I</u>	<u>X</u>	<u>TOTAL</u>
CT	21		2	47	1	71
DA	11	1	10	5	2	29
EQ	443	471	589	2927	119	4549
GB	11	1	2	46	1	61
ID						0
LP			9	321		330
MC	350	3	74	609	4	1040
OM	98	15	1	52		166
OT	3			7		10
SO	30		206	1093	26	1355
UT	131	190	18	942	21	1302
VO	2	1		4	3	10
WR	10			4	35	49
TOTAL:	1110	682	911	6057	212	8972

The above information is provided from data submitted by past Contractor(s) and is provided for information purposes only.

ADVANCED SYSTEMS - TICKET HISTORY

	AVL	BARRIER	CCTV	EQUIP.	MCHD	GATES	UTILITY	TOTAL
5 months - 2010	9	3	74	78	21	21	1	
2009	41	4	96	149	23	28	3	344
2008	20	9	185	144	26	51	2	437
2007	39	3	179	127	24	43	4	419
2006	12	7	204	96	16	24	2	361
2005	<u>NA</u>	<u>6</u>	<u>63</u>	<u>91</u>	<u>44</u>	<u>11</u>	<u>1</u>	<u>216</u>
Avg:	22	6	145	121	27	31	2	355

KEY --
AVL: Automatic Vehicle Locator
BARRIER: Restraining Barrier
CCTV: Closed Circuit Television Camera
EQUIP: Equipment Problem or Malfunction
MCHD: Motorist Caused Highway Damage
GATES: Swing Gate Problem or Malfunction (not MCHD)
UTILITY: Utility Caused Problem

The above information is provided from data submitted by past Contractor(s) and is provided for information purposes only.

MOTORIST CAUSED DAMAGE -- TICKET HISTORY

Total Traffic Signals, Hwy. Lighting & Surveillance Incidents

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Yearly	Avg
2010	85	88	58	57	41								<u>Total</u>	66
2009	128	105	68	56	47	52	54	59	47	76	39	112	843	70
2008	160	152	93	73	85	63	68	72	61	64	68	172	1131	94
2007	126	157	93	85	73	78	69	86	59	67	75	158	1126	94
2006	102	104	84	76	86	81	72	80	86	97	80	93	1041	87
2005	<u>148</u>	<u>82</u>	<u>88</u>	<u>83</u>	<u>69</u>	<u>65</u>	<u>82</u>	<u>82</u>	<u>67</u>	<u>87</u>	<u>121</u>	<u>115</u>	<u>1089</u>	<u>91</u>
Avg:	125	115	81	72	67	68	69	76	64	78	77	130	1046	85

Traffic Signal Incidents

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Yearly	Avg
2010	41	48	27	31	23								<u>Total</u>	34
2009	64	53	36	32	27	26	34	23	27	46	19	58	445	37
2008	71	70	46	40	50	40	33	45	34	41	36	83	589	49
2007	64	84	60	45	54	47	33	55	32	45	54	88	661	55
2006	50	65	50	49	58	46	42	49	43	61	52	49	614	51
2005	<u>71</u>	<u>50</u>	<u>53</u>	<u>45</u>	<u>43</u>	<u>34</u>	<u>57</u>	<u>53</u>	<u>39</u>	<u>56</u>	<u>70</u>	<u>63</u>	<u>634</u>	<u>53</u>
Avg:	60	62	45	40	43	39	40	45	35	50	46	68	589	48

Hwy. Lighting Incidents

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Yearly	Avg
2010	34	28	29	22	16								<u>Total</u>	26
2009	46	42	30	19	19	22	19	33	16	27	17	51	341	28
2008	76	68	40	27	29	20	28	19	23	20	28	81	459	38
2007	51	57	24	34	15	26	25	27	22	17	17	59	374	31
2006	44	31	26	22	25	27	23	26	35	34	22	38	353	29
2005	<u>60</u>	<u>27</u>	<u>25</u>	<u>28</u>	<u>22</u>	<u>26</u>	<u>20</u>	<u>18</u>	<u>21</u>	<u>29</u>	<u>44</u>	<u>44</u>	<u>364</u>	<u>30</u>
Avg:	52	42	29	25	21	24	23	25	23	25	26	55	378	31

Surveillance Incidents

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Yearly	Avg
2010	10	12	2	4	2								<u>Total</u>	6
2009	18	10	2	5	1	4	1	3	4	3	3	3	57	5
2008	13	14	7	6	6	3	7	8	4	3	4	8	83	7
2007	11	16	9	6	4	5	11	4	5	5	4	11	91	8
2006	8	8	8	5	3	8	7	5	8	2	6	6	74	6
2005	<u>17</u>	<u>5</u>	<u>10</u>	<u>10</u>	<u>4</u>	<u>5</u>	<u>5</u>	<u>11</u>	<u>7</u>	<u>2</u>	<u>7</u>	<u>8</u>	<u>91</u>	<u>8</u>
Avg:	13	11	6	6	3	5	6	6	6	3	5	7	79	6

The above information is provided from data submitted by past Contractor(s) and is provided for information purposes only.

LIGHTING OUTAGE HISTORY -- TOTAL OUTAGES REPAIRED BY MONTH

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
2010	671	576	542	705									
2009	840	539	667	714	618	490	544	451	573	687	506	519	7148
2008	820	629	490	613	532	506	514	690	691	660	452	448	7045
2007	536	501	599	538	472	460	449	490	690	423	432	562	6152
2006	642	642	498	633	536	571	491	571	541	621	517	531	6794
2005	<u>706</u>	<u>344</u>	<u>663</u>	<u>635</u>	<u>641</u>	<u>599</u>	<u>671</u>	<u>538</u>	<u>491</u>	<u>530</u>	<u>519</u>	<u>766</u>	<u>7103</u>
Avg.	703	539	577	640	560	525	534	548	597	584	485	565	6856

The above information is provided from data submitted by past Contractor(s) and is provided for information purposes only.

SECTION 2 -- SPECIAL PROVISIONS - NON-ROUTINE MAINTENANCE PAY ITEMS

Figures mentioned herein will be available upon request at the Pre-Bid Meeting

Advanced Technology Systems – Non-Routine Pay Items

ACC1 CCTV DOME CAMERA ASSEMBLY, COLOR, PTZ CONTROL, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State stock a Color CCTV dome camera assembly complete with an outdoor environmentally rated housing as manufactured by Bosch, Inc. Series 500i with external transformer or approved equal suitable for integration into the existing system. The assembly shall include a high performance color camera with 26X optical zoom or better, and 12X digital zoom. The assembly shall also include the pan, tilt and zoom mechanisms. An alternate camera manufacturer may be used provided that it is directly compatible with the existing CCTV camera system without the use of external PTZ protocol conversion devices and with the approval of the Engineer.

Transportation. The Contractor shall transport and handle the CCTV cameras in complete conformance with the manufacturer's recommendations.

Basis of Payment. This work shall be paid at the contract unit price each for CCTV DOME CAMERA ASSEMBLY, COLOR, PTZ CONTROL, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State Stock as specified herein and as directed by the Engineer.

ACC2 CCTV CAMERA ASSEMBLY, COLOR, FIXED CONTROL, FURNISH ONLY

Description. This item shall consist of furnishing a color CCTV camera assembly complete with housing and mounting adaptor, as manufactured by Bosch, assembly no. LTC 0630/61 camera, with LTC 3274/41 lens, LTC 9488/61 housing with sun shield and AH2000 mounting adaptor, or as approved by the Engineer and compatible with the fixed position CCTV camera system in use. The item shall also consist of furnishing, one pair of multimode fiber transceivers, GE Model S700VT-EST transmitter and Model S700VR-RST receiver, and one junction box (8"x8"x6", NEMA 4, Stainless Steel) to house the new transmitter, or as approved by the Engineer, compatible with the existing CCTV camera system in use. Modifications to the existing wiring, multimode fiber and raceways and removal of the old camera and transceivers shall be incidental to this pay item.

Transportation. The Contractor shall transport and handle the CCTV cameras in complete conformance with the manufacturer's recommendations.

Basis of Payment. This work shall be paid at the contract unit price each for CCTV CAMERA ASSEMBLY, COLOR, FIXED CONTROL, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State Stock as specified herein and as directed by the Engineer.

ACM1 CCTV COLOR MONITOR, QUAD, 4", FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State Stock four, 4" inch, active matrix, color monitors, Marshall Electronics V-R44P or approved equal, with the following characteristics.

Power Source	120 V AC, 60 Hz
Power Consumption	3 W (Approx.)
Input/Output	Video (Input:1 with active loop through)
TV System	NTSC
Resolution	480 x 234 pixels, 112,300 total

Dot Pitch	.171 mm X .264 mm pixel
Viewing Radius	130 ⁰ Horizontal and vertical
Brightness (in cd/m ²)	300
Contrast Ratio	500:1
Actual Display Size (Approx.)	3.23" X 2.43" (4" diagonal)
Overall Size (Approx.)	19.125"W X 3.43"H X 1.9"D
19-type Rack-Mount	Yes, 2U High
Ambient Operating Temperature	-10°C to +50°C (+14°F to +122°F)
Ambient Operating Humidity	Less than 90%
Backlight Life	5 year /50,000 hours
Weight	3.5 lbs.

Basis of Payment. This work shall be paid at the contract unit price each for CCTV COLOR MONITOR, QUAD, 4", FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State stock as specified herein and as directed by the Engineer.

ACM2 CCTV COLOR MONITOR, 8.4", FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State Stock one, 8.4 inch, active matrix, CCTV Color monitor, Marshall Electronics V-R84P-SDI or approved equal, with the following characteristics. Note a REVLAC panel installation shall include custom mounting bracket.

Power Source	120 V AC, 60 Hz
Power Consumption	4 W (Approx.)
Input/Output	1 composite video, S-Video and SDI inputs with active loop through
TV System	NTSC
Resolution	800 x 600 dots with 1.44 million RGB pixels
Dot Pitch	.213 mm square pixel
Viewing Radius	130 ⁰ Horizontal and vertical
Brightness (in cd/m ²)	350
Contrast Ratio	500:1
Actual Display Size (Approx.)	6.7" X 5.03" (8.4" diagonal)
Overall Size (Approx.)	8.74"W X 6.73"H X 2.65D
Stand Alone	Yes
Ambient Operating Temperature	-10°C to +50°C (+14°F to +122°F)
Ambient Operating Humidity	Less than 90%
Backlight Life	5 year /50,000 hours
Weight	3 lbs.

Basis of Payment. This work shall be paid at the contract unit price each for CCTV COLOR MONITOR, 8.4", FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State Stock as specified herein and as directed by the Engineer.

ACM3 CCTV COLOR MONITOR, DUAL, 8.4", FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State Stock one dual screen, 8.4 inch Color TFT monitors, Marshall Electronics V-R82DP-2C or approved equal, with the following characteristics.

Power Source	120 V AC, 60 Hz
Power Consumption	10 W (Approx.)
Input/Output	Video (Input: 2 / Output: 2, loop through) -- composite video
TV System	NTSC
Resolution	800 x 600 dots with 1.44 million RGB pixels
Dot Pitch	.213 mm square pixel
Viewing Radius	130 ⁰ Horizontal and vertical
Brightness (in cd/m ²)	350
Contrast Ratio	500:1
Actual Display Size (Approx.)	17 cm X 12.8 cm (8.4" diagonal)
Overall Size (Approx.)	25 cm (9-13/16") diagonal
19-type Rack-Mount	Yes, 4U Height
Ambient Operating Temperature	-10°C to +50°C (+14°F to +122°F)
Ambient Operating Humidity	Less than 90%
Backlight Life	5 year /50,000 hours
Dimensions (W x H x D)	486 x 175 x 38 mm (19-1/8" x 6-7/8" x 1-1/8")
Weight	2.4 kg (5.5 lbs.)

Basis of Payment. This work shall be paid at the contract unit price each for CCTV COLOR MONITOR, DUAL, 8.4", FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State Stock as specified herein and as directed by the Engineer.

ACM4 CCTV COLOR MONITOR, 12", FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State Stock a 12.1", LCD, Color CCTV monitor, Marshall Electronics V-LCD12.1-SVGA or approved equal, with the following characteristics.

Power Source	120 V AC, 60 Hz
Power Consumption	40 W (Approx.)
Input/Output	Composite Video and S-Video
TV System	NTSC
Resolution	800 X 600 Pixels
Dot Pitch	0.3075 mm square pixels
Brightness	25 cd
Display	12.1" diagonal (9.62" X 7.25")
Overall Size (Approx.)	11.5" X 8.75" X 1.25"

Basis of Payment. This work shall be paid at the contract unit price each for CCTV COLOR MONITOR, 12", FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State Stock as specified herein and as directed by the Engineer.

ACP1 CCTV CAMERA POLE, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State Stock, a CCTV camera pole, under 55 feet mounting height, complete with CCTV camera mounting brackets as manufactured by Union Metal Inc., or as approved by the Engineer, identical to the existing CCTV camera poles in use.

Basis of Payment. This work shall be paid at the contract unit price each for CCTV CAMERA POLE, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State Stock as specified herein and as directed by the Engineer.

ACP2 CCTV CAMERA LOWERING SYSTEM, FURNISH AND INSTALL

Description. This item shall consist of furnishing and installing a CCTV camera lowering system as directed by the Engineer.

The camera lowering system shall be designed to support and lower a standard closed circuit television camera, lens, housing, PTZ mechanism, cabling, connectors and other supporting field components without damage or causing degradation of camera operations. The lowering system shall consist of a suspension contact unit, divided support arm, and a pole adapter for attachment to a pole top tenon, pole top junction box, and camera connection box. The divided support arm and receiver brackets shall be designed to self-align the contact unit with the pole center line during installation and insure the contact unit cannot twist under high wind conditions. Round support arms are not acceptable. The camera-lowering device shall withstand wind forces of 100mph with a 30 percent gust factor using a 1.65 safety factor. The lowering device manufacturer, upon request, shall furnish independent laboratory testing documents certifying adherence to the stated wind force criteria utilizing, as a minimum, effective projected area of the camera system to be attached.

The suspension contact unit shall have a load capacity 200 lbs. with a safety factor of 4 and with a locking mechanism between the fixed and moveable components of the lowering device. This latching mechanism shall securely hold the device and its mounted equipment and relieve their weight from the lowering cable. The fixed unit shall have a heavy duty cast tracking guide and means to allow latching in the same position each time. The contact unit housing shall be weatherproof with a gasket provided to seal the interior from dust and moisture.

The camera-lowering device shall be operated by use of a portable lowering tool. The tool shall consist of a lightweight metal frame and winch assembly with cable as described herein, a quick release cable connector, an adjustable safety clutch and a variable speed industrial duty electric drill motor. This tool shall be compatible with accessing the support cable through the hand hole of the pole. The lowering tool shall attach to the pole with one single bolt. The tool will support itself and the load assuring lowering operations and provide a means to prevent freewheeling when loaded.

All electrical and video coaxial connections between the fixed and lowerable portion of the contact block shall be protected from exposure to the weather by a waterproof seal to prevent degradation of the electrical contacts. The electrical connections between the fixed and movable lowering device components shall be designed to conduct high frequency data bits and one (1) volt peak-to-peak video signals as well as the power requirements for operation of dome environmental controls. All cables in all sections of the lowering device which are used for video signals shall be shielded coax.

The interface and locking components shall be made of stainless steel and or aluminum. All external components of the lowering device shall be made of corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

The camera-lowering device shall be in production and in successful use for a highway application for a minimum of 3 years. The camera lowering device shall be the [MG]² Model CLDMG2-HYP-XXX or approved equal.

Basis of Payment. This item shall be paid at the contract unit price each for a CCTV CAMERA LOWERING SYSTEM, FURNISH AND INSTALL, which shall be payment in full for furnishing, delivering to State Stock, removing from State Stock, transporting, assembling and installing a CCTV camera lowering system, as specified, for a completely operational system, as directed by the Engineer.

ALD1 LED CHEVRON SIGN, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State stock a LED chevron sign as manufactured by National Sign & Signal Company, reference National Sign Drawing No. B5450-592LED or as approved by the Engineer, compatible to the existing fiber optic chevron signs in use complete with heaters. The signs shall have built in thermostats as have the existing fiber optic chevrons.

Basis of Payment. This work shall be paid at the contract unit price each for LED CHEVRON SIGN, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State stock as specified herein and as directed by the Engineer.

ALD2 LED AUXILIARY SIGN, FURNISH ONLY

Description.

This item shall consist of furnishing and delivering to State stock a LED auxiliary sign as manufactured by National Sign & Signal Company compatible to the existing fiber optic auxiliary signs in use complete with heaters. The auxiliary sign shall be of the following type as directed by the Engineer:

Type of Sign	National Sign Drawing No
"GATES CLOSING"	B5447-589LED
"STAY IN YOUR LANE"	B5448-590LED
Red "X"	

The LED auxiliary sign shall include thermostats to control the heaters.

Basis of Payment. This work shall be paid at the contract unit price each for LED AUXILIARY SIGN, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State stock as specified herein and as directed by the Engineer.

ALD3 LED LANE USAGE SIGN, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State stock a LED Lane Usage sign compatible to the existing lane usage signs in use complete.

Basis of Payment. This work shall be paid at the contract unit price each for LED LANE USAGE SIGN, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State stock as specified herein and as directed by the Engineer.

ALD4 LED GORE SIGN, FURNISH ONLY

Description. This work shall consist of furnishing and delivering to storage a LED gore sign as described herein. The LED shall be fully operationally equivalent to the existing fiber optic gore sign.

Vendors. The LED system (sign, controller, related appurtenances) shall be manufactured by or approved equal:

Daktronics, Inc.	800-843-5843
Skyline Products:	800-759-9046
National Sign & Signal	269-963-2865

Paint. Paint for the sign front and mask shall be a fluoropolymer-based coating system containing KYNAR 500 resin or equivalent.

Displays. The display shall be provided, utilizing 26mm diameter pixels, each consisting of identical clusters of LED's as per the requirements stated herein.

The signs shall have sufficient borders on all four sides for display clarity and background contrast, and shall be legible from a distance of 300 feet, within a minimum 17 degree cone of vision on each side of the centerline perpendicular to the width of the sign.

The minimum sign luminance shall be 4300 cd/sq m over the range of 8.5 degrees right and left of the vertical geometric center of the sign and 8.5 degrees below the horizontal geometric center of the sign.

All LED's shall conform to the following minimum requirements:

LED's shall be un-tinted, non-diffused, high-output, solid state lamps utilizing aluminum indium gallium phosphide (AlInGaP) LED technology. These lamps shall be as produced by Hewlett-Packard or approved equal and shall be fully interchangeable.

The MTBF at an ambient temperature of +85 degrees Celsius shall be a minimum of 500,000 hours. LED's shall have an operating temperature range of -13 to +185 degrees Fahrenheit (-25 to +85 Celsius).

LED's shall be of the size T-1 3/4 (5 mm).

Normalized intensity of an LED at an angle of 10 degrees off the center axis shall be no less than 50% of the normalized intensity at an off-axis angle of 0 degrees.

Pixels. LED's shall be mounted in 26mm diameter pixels, each one consisting of 4 LED's.

Pixels shall be mounted on a printed circuit board, and shall be arranged into a seven (7) pixel high by five (5) pixel wide matrix. Characters formed by the VMS displays shall have a minimum of seven (7) pixels in height. The number of pixels making up the character width shall vary by character and shall be in accordance with the characters described herein. The pixel pitch, or center-to-center spacing, shall produce a character 18. in height (+/- 0.5%).

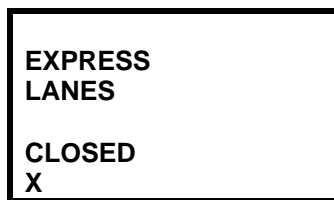
The LED printed circuit board shall be double-sided and shall be plated on both sides with a minimum of .002 inches of copper. The cathode pads shall be located on both the front and back sides of the board. Each cathode lead trace pad shall be a minimum of 0.40 square inches in size.

The LED printed circuit boards shall be coated on their front and back sides with a moisture-resistant acrylic conformal coating. The coating shall have a minimum cured thickness of 0.003 inches, except around the front of each LED pixel, where the coating shall be a minimum of 0.006 inches thick. Each pixel shall be protected from normal handling damage by a circular polycarbonate plastic ring that clips onto the printed circuit board and surrounds the LED's. The ring shall be 0.5 to 0.6 inches in height and have a minimum wall thickness of 0.050 inches.

Each pixel printed circuit board shall attach mechanically to an aluminum module panel using standoffs and wing-nut fasteners. Each printed circuit board shall be removable from its module using simple hand tools or no hand tools. The front of the module panel shall be painted flat black.

Pixels shall have automatically variable brightness capabilities. Sign shall only operate at full brightness on cloudless days with full sunshine.

Pixels shall operate with no more that 20 mA of current at full intensity.



Ramp Closed



Ramp Open

Dimensions	
Sign Height	47"
Sign Width	40"
Height of X	30"
Character Height	6"
<i>All dimensions are approximate</i>	

LED Colors	
Express Lanes	Amber
Closed	Red
X	Red
Open	Green
Arrow	Green

Exterior Housing. Sign housings shall be constructed of aluminum, alloy 3003-H14, and shall not be less than 1/8 inch thick. Seams shall be continuously welded except for the sign face. Framing structural shapes shall be constructed of aluminum, alloy 6061-T6. Non-corrosive materials shall be used where possible and corrosion protection shall be provided between dissimilar metals. Sign cases shall be cleaned and deoxidized after welding.

The enclosure shall be thoroughly cleaned and then neutralized for priming. The housing shall then be treated with a phosphate coating solution and sealed as per Military Specification MIL-C-5541. The surface shall be prepared for priming per the primer manufacturer's recommended pretreatment procedure. A zincchromate primer shall be applied, 34 mills thick, followed by a top coat of epoxy-mastic

based flat matte black paint. The primer and paint shall be compatible products from the same manufacturer.

Sign face shall be designed and developed in a manner that reduces or eliminates reflections from headlights or sunlight. Signs shall have ICYNAR 500 or equivalent polycarbonate sign face coverings. Coverings shall be weather tight, ultraviolet protected, and non-diffusing, with a thickness of 1/4 inch. Polycarbonate sign face shall be covered with a 0.040 inch minimum thickness aluminum mask. Aluminum mask shall provide openings directly in front of each pixel. Pixel openings shall be of sufficient size so as to not interfere with LED light output. Sign face shall be designed to minimize bowing.

Sign housing, windows, framing and mounting members shall be designed to withstand a wind velocity of 90 mph with a gust factor of 30 percent in accordance with AASHTO's "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" and certified by a registered Professional Structural Engineer.

Signs shall be constructed to present a clean, neat appearance; the equipment located therein shall be protected from moisture, dust, dirt and corrosion. Sign enclosures shall contain small weep holes for draining moisture accumulating in the signs from condensation. Weep holes shall be designed so as to protect against insect entrance.

Lifting eyes or other equivalent components shall be provided for moving and mounting signs. The sign housing shall be designed such that the sign can be shipped and temporarily stored without damage or undue stresses prior to installation. The sign shall be provided with a temporary storage support frame that will permit the storage of the sign in an above-ground vertical position without damage to the sign housing.

Power Supplies. Power supplies shall operate from 208 VAC power. The LED displays shall be operated at low internal DC voltage not exceeding 24 VDC. Power supplies shall be solid-state electronic switching regulated output. Two supplies shall be provided for each 1/3 of the display. Power supplies shall be wired in redundant parallel configuration for each section and shall provide equal amounts of current to each section. Power supplies shall be rated such that if one supply fails, the other can operate the entire LED section under full load conditions. Power supplies shall operate from -2 to +140 degrees F (-30 to +60 C).

Power supplies shall be short-circuit protected by DC power off and shall reset automatically after 5 seconds of AC power off. Power supplies shall also be short-circuit protected by a minimum overload allowance of 105% and have an efficiency rating of at least 75%. Power supply shall be UL listed.

Sign controller shall be capable of sensing the failure of each individual power supply. When one of the power supplies in a group has failed, the status of each supply shall be clearly displayed on the control computer screen.

Terminal Blocks and Connectors. Screw type terminal blocks and crimp-on spade terminals shall be used for all wire connections except plug connections. Telephone type knife connectors are not acceptable.

Lightning Protection. Surrrestor SPA-300 or approved equal shall be provided on all external power lines.

Testing. The Contractor shall deliver a sample of the character module to be used in the proposed sign. The module shall be capable of being turned fully on and fully off with all LEDs operating at full design brightness. A sample of the sign face material to be used, attached at the design distance from the character module, shall be included. If any deviations from these Special Provisions are discovered, the sample will be returned to the Contractor for modification, and resubmitted for testing.

Sign Performance Testing. The signs being installed under this project shall be tested for operational completeness. Testing shall be performed in the presence of the Engineer and/or his/her designated representative and shall consist of a pre-test check-out and a systems Sixty-day (60) Performance Test.

The Contractor shall state, in writing, that the sign is complete and ready for local testing. Within five (5) days upon receiving his notification the Authority shall begin the Pre-test Check-out.

Pre-test Check-out:

The Engineer and/or his/her representative shall thoroughly exercise the system, All hardware, and performance functions, including the maintenance and trouble shooting, shall be individually checked for compliance with the specifications.

Any portion of the project which does not meet these specifications shall be corrected by the Contractor and rechecked by the Engineer. The Contractor shall demonstrate that the field equipment can meet the local performance requirements.

Sign Sixty-day (60) Performance Test:

Following successful completion of the Pre-test Check-out, and the correction, repair and/or replacement of identified deficiencies, the Contractor shall demonstrate that the system satisfies the specified operational requirements as an integrated unit by operating the system continuously for ten consecutive days without malfunction or failure.

The Contractor shall notify the Authority, in writing, that the Sign Sixty-day (60) Performance Test will begin on a date and time mutually acceptable to all parties.

During the Sign Sixty-day (60) Performance Test, the Engineer shall exercise the system and document the performance of all specified features and any other events which could be expected to occur in an operational Traffic Management System. During the system exercise, the Sign Sixty-day Performance test may be suspended or terminated by the Engineer or the Contractor. Suspension is defined as halting the test progress, the Contractor taking necessary corrective action, and the test being resumed from the point of suspension. Termination is defined as halting the test. In the event of termination, the Contractor shall take necessary corrective action, and the test shall be restarted from the beginning. Any corrective action shall be by mutual agreement between the Contractor and the Engineer.

The Sign Sixty-day (60) Performance Test may be suspended for the following reasons, including but not limited to:

Failure or interference due to conditions beyond the control of the Contractor, such as vandalism, traffic accidents, power failures and similar occurrences.

Failure of any support or diagnostic equipment necessary to successfully test the system.

The Sign Sixty-day (60) Performance Test may be terminated for the following reasons, including but not limited to:

Failure of any hardware or performance item to meet these Special Provisions.

Failure of any pixel.

Failure of more than 1% of the total number of LEDs in the sign at the end of the test.

Failure of any pixel to turn off or turn on.

The appearance of any problem which, in the opinion of the State, has a significant effect upon the reliability, safety or operation of the system.

Certification. The Contractor shall furnish supplier documentation and certification for all individual components in the finished product, showing that the component manufacturer has established an MTBF rate and what the rate is. Payment will not be made for any sign installed without component certification.

The Contractor shall furnish the following submittal for approval before the delivery of any sign:

LED manufacturer's data sheet, stating the make and model of LED to be used, the luminance of the LED at a stated current, the maximum/minimum operating temperatures and other pertinent information.

Pixel Design - Include a detail drawing of the physical layout of the pixel, including the pixel size, number of LEDs, board detail, operating voltage and current, method of weather protection, orientation of the individual LEDs and the calculated luminance at the following points:

10° right and left of the vertical geometric center.

90° perpendicular to the pixel.

10° below the horizontal geometric center of the sign.

The module design, including mounting details.

The cabinet design and installation details of equipment in the cabinet.

Basis of Payment. This work shall be paid at the contract unit price each for LED GORE SIGN, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State stock as specified herein and as directed by the Engineer.

ARR1 REVLAC RESTRAINING BARRIER TAPE CARTRIDGE, REFURBISH

Description. This item is for furnishing and delivering to State Stock an Energy Absorbing Tape Cartridge completely refurbished, with tape assembly for use with the Vehicle Restraining Mechanisms for the Kennedy Expressway REVLAC System.

Materials. The energy absorbing tape cartridge assembly shall be refurbished Part No. EJ31256, Tape assembly and EJ41223, energy absorber, as manufactured by the Entwistle Company.

The energy absorbing device shall be model number MBF 4K-200-A as manufactured by The Entwistle Company. The following additional requirements shall be incorporated into the design of the barrier restraining mechanism:

The leading end of the energy absorbing device shall attach to one end of the restraining net with a removable connection.

The mounting of the energy absorbing device shall not degrade its FHWA-Approved operating characteristics.

The mounting of the energy absorbing device shall facilitate its replacement as a complete unit and also shall facilitate replacement only of the energy absorbing tape contained within its cartridge. In either case, replacement shall be from the ramp side of the unit

Basis of Payment. This work shall be paid at the contract unit price each for REVLAC RESTRAINING BARRIER TAPE CARTRIDGE, REFURBISH, which price shall be payment in full for the work as described herein.

ARR2 REVLAC RESTRAINING BARRIER DRAGNET ASSEMBLY, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State stock a complete restraining barrier dragnet assembly as manufactured by The Entwistle Company, compatible with the existing dragnet and barrier. The dragnet assembly shall be of the following type as directed by the Engineer:

RAMP	Entwistle Part No.
OB Mainline	EJ41224-10
OB Ontario	EJ41224-20
IB Edens	EJ41224-20
IB JFK West Leg	EJ41224-30
OB Slip Ramp	EJ41225-10
IB Slip Ramp	EJ41225-20

The restraining net shall be the barrier Vendor's standard Highway Safety Net. The net shall consist of a minimum of two horizontal runs of stranded wire rope interlaced through a section of galvanized chain link fence or shall consist of a minimum of two horizontal runs of wire rope and wire rope vertical members spaced at approximately six inch centers. The restraining net shall be provided with removable connectors and with vertical stays and tensioning devices to maintain proper net tension and deployment. The Barrier Vendor shall submit complete details of the restraining net construction including sized, materials, and rated capacities of all components used. The restraining net shall be compatible with the energy absorbing devices, be FHWA-Approved, and be approved by the Engineer.

The net shall have a reflective material of eight inch wide, alternating red and white, diagonal stripes adhered to a semi-rigid, conformable, panel fastened to the net. The panel shall be capable of repeated impact without splintering, fracturing, or permanently deforming. The panel shall not alter the performance characteristics of the vehicle restraining mechanism.

Reflective Material for Restraining Net. Reflective sheeting shall be used on both sides of the restraining barrier net as shown on the Contract Drawings. All sheeting requirements shall meet or exceed the standards as defined in AASHTO M 268-84, Retro reflective Sheeting for Traffic Control.

The sheeting shall be a minimum of Type III High Intensity with pre-coated pressure sensitive adhesive (Class 1), diagonal alternating red and silver white stripes as shown on the Contract Drawings, angling down at 45° from the left to the right. The sheeting shall be oriented to take advantage of the directional reflectivity of the material as defined by the supplier of the reflective sheeting.

The preferred material for this application shall be "Scotchlite" Reflective Sheeting Diamond Grade Series 3970G, as manufactured by 3M, or approved equal. The retro reflective sheeting shall be installed strictly according to the manufacturer's instructions. Special attention to surface preparation and mounting of sheeting for proper bonding and adhesion shall be rigidly followed.

Basis of Payment. This work shall be paid at the contract unit price each for REVLAC RESTRAINING BARRIER DRAGNET ASSEMBLY, FURNISH ONLY, of the location specified, which price shall be payment in full for furnishing and delivering the materials to State stock as specified herein and as directed by the Engineer.

ASC1 SWING GATE CONTROLLER, FURNISH ONLY

Description. This item is for furnishing and delivering to State Stock, a complete Swing Gate controller, for the Kennedy Expressway Traffic Redirection and Access Control System as specified herein.

Materials. The swing gate controller shall be Model Number HZ64B as manufactured by B&B Electromatic, Norwood, Louisiana and shall be a clockwise or counter-clockwise unit as designated by the Engineer without a gate arm or gate arm tip.

Support Frame. The frames shall be rigid structural weldments designed to withstand all operating loads imposed upon them by the swing gates and shall transfer the loads into the barrier walls via the anchor bolts.

The support frame for the swing gate assembly shall be fabricated from ASTM A36 structural steel shapes and plates using standard structural shapes to the maximum extent possible. All steel used in frame fabrication, including the component mounting plates, shall be at least 0.375 inches thick.

The configuration of all frames shall provide a rigid frame support for mounting additional items as described elsewhere herein.

The frames shall be drilled to match the anchor bolt patterns shown on the Contract Drawings with slotted anchor bolt holes, one inch diameter by two inches long, to allow for field positioning. The anchor bolt pattern shall match the anchor bolts installed under a previous contract.

Ease all exposed edges to a radius of 1/32 inch or more. Corners, seams, and joints shall be welded continuously and shall comply with requirements specified for welding. Welding flux shall be removed immediately and all exposed welds and surfaces shall be cleaned and ground to remove all scale, burrs, and sharp edges. Joints that may be exposed to the weather shall be fabricated to prevent the accumulation of water, dirt, and ice.

The frames shall be complete with all mounting requirements for installation of the gate actuators, controls, housing, and operational warning signs. Mounting plates shall be accurately drilled to match the components mounted. Torch-cut holes are not acceptable. The frames shall be hot dip galvanized after fabrication in compliance with Hot Dip Galvanizing.

The frame shall incorporate removable fitting attachments (lugs) for use during initial installation and for subsequent maintenance of the swing gate assembly. The lifting lugs shall be located on the top of the swing gate housing, as generally shown on the Contract Drawings, and shall be either stainless steel or galvanized to protect the lifting attachments from the elements. The threads of the lifting lugs shall penetrate the housing and engage threaded members welded to the support frame.

The lifting lugs shall be removed after installation and stored inside the swing gate housing in a rigid, non-metallic, re-sealable container, mounted to the inside of the swing gate housing.

Stainless steel bolts with watertight gasketed washers shall be provided with each unit to seal the lifting lug housing penetrations and to achieve an uncluttered appearance upon removal of the lifting lugs.

A stainless steel bottom plate, not less than 12 gauge thickness, shall fit against the bottom of the support frame to cover the opening in the top of the barrier wall at the location of the swing gate insert. Within the confines of the support frame the bottom plate shall cover the entire top area of the swing gate insert, not already covered by the swing gate cover plate (see drawings CP-01 and CP-02), and extend to the capstan end of the frame. Vertical lugs, welded to the upper side of the bottom plate, shall be used to secure the plate against the bottom of the support frame angles by bolting through the lugs and the vertical legs of the angles on three sides of the frame. The bottom of the support frame will vary between 0.875 and 1.75 Inches above the top of the swing gate insert frame (see Mounting Detail on SG series drawings). Provide an adjustable 12 gauge stainless steel skirt, extending the full width of the housing, to close the gap between the bottom plate and the top of swing gate insert. This skirt shall be located along

the one edge of the bottom plate which has no support frame angle to fit against. The bottom plate and skirt shall be designed to exclude vermin, to prevent the accumulation of ice, snow, and water within the housing, and to provide safety and security. The bottom plate shall fit as closely as possible around the gate arm capstan. The Swing Gate Vendor shall submit design details for review.

Housing. The housing for the swing gate unit shall be fabricated to accurately fit over the support frame and bolt to the frame to form a weatherproof enclosure to prevent the accumulation of dust, dirt, water, ice, snow and prevent the entrance of vermin. The housing shall be removable and incorporate a positive locating design to facilitate positioning of the housing on the frame. Access doors shall be provided on three sides of the housing to provide maintenance access to each component within the enclosure.

Housings shall be fabricated from Type 302, or approved equal, stainless steel sheets of not less than 12 gauge thickness. Welding flux shall be removed immediately and all exposed welds and surfaces shall be cleaned to remove all scale, burrs, and sharp edges. All exterior welds and surfaces shall be ground smooth and blended to remove all roughness. Each housing shall have two large gasketed doors on the roadway side of the housing and one access door at each end of the housing to provide access for routine maintenance and for servicing of the swing gate assembly. The doors shall be fabricated from the same material as the housing, with a stamped raised frame/flange for rigidity, and be neoprene gasketed. Housing openings and doors shall be reinforced to eliminate deflection.

Doors shall be hung using bronze slip off hinges with stainless steel hinge pins and incorporate a three point door latch with provision for padlocking, and hold-open linkage. The two access doors on the roadway side of the unit shall be provided with heavy duty brass padlocks; all padlocks shall be keyed alike and each swing gate unit shall be provided with two keys. The two access doors at each end of the unit shall be opened from the inside of the unit. With access doors closed, no portion of the housing, including its latches and locks, may extend beyond the face of the barrier wall. In their open position, access doors may extend past the face of the barrier wall.

Each housing shall have a port opening fitted with a hinged, cast stainless steel cover held normally closed by gravity. The port opening shall be aligned with the extended output shaft of the transmission to permit Inserting the shaft of a hand crank through the opening and onto the end of the extended output shaft. Brackets shall be provided, within the housing, upon which to store the crank when not in use. The Swing Gate Vendor shall submit a sample cast cover for review by the Engineer.

The roof of housing shall be pitched to prevent build-up or ponding of water.

Each housing shall completely enclose the support frame and anchors bolts. The two end doors shall provide access to the anchor bolts for installation and maintenance of the unit:

The local controls for the swing gate mechanism shall be coordinated with the remote building Programmable Logic Control (PLC) system for the Reversible Lanes Traffic Redirection and Access Control System. Each swing gate shall be complete with local controls consisting of, but not limited to, the following:

- a) Main Motor Circuit Protector with Auxiliary Contacts
- b) Control Power Transformer
- c) Motor Overloads with Auxiliary Contacts
- d) Reversing Starter - minimum NEMA she 1
- e) Terminal Blocks for both AC and DC Voltages
- f) 125 Volt DC Coil, Remote Control Relays
- g) Limit Switches - Cam Actuated
- h) Limit Switches
- i) Proximity Switch - two piece magnet actuated
- j) Remote Control/Local Manual Control Maintained Correct Selector Switch
- k) "Manual Open/Remote Control/Manual Close" Spring Return Selector Switch
- l) "ON/OFF" Maintained Contact Rotary Pilot Switch
- m) Circuit Breaker for the operation of the gate arm slot heater.

- n) Circuit Breaker for the 120 VAC controller power
- o) LED's for DC control indication.

All electrical components furnished shall be NEMA rated, U.L listed, readily available products of a national, USA manufacturer. Similar components shall be of the same manufacturer.

The entire local control system is to be serviceable from the roadway side of the unit. The local controls shall be enclosed within the swing gate housing and contained within a separate, self-supporting, single lever latch type NEMA 4X, enclosure. The enclosure shall not attach to the swing gate housing, but shall be attached to the swing gate housing support frame. All selector switches shall be mounted on the hinged door of the NEMA 4X enclosure which mounts inside of the swing gate housing. Switches shall be NEMA 4/13 type and installed with suitable gasketing to retain the NEMA 4 rating.

The local controls shall permit valid automatic operations to resume after manual positioning of the gate arm or switching from manual to automatic operation without requiring on-site resetting of the gate arm.

All wiring shall be through the use of pressure type terminal blocks and all control wires shall terminate in these blocks. Each terminal shall be clearly labeled (number or alpha-numeric), and all wires shall be color coded based on their connected voltage. The wire numbers for the interconnection points to the remote control system shall be the same as shown on the Contract Drawings. The wiring diagram shall identify all colors and wire numbers. Wire all auxiliary contacts to the terminal block to permit transmission of the selector switch settings to the remote control system.

Where number of wires are trained through a box or wired to a hinged cover, they shall be grouped by circuit where applicable, bundled using appropriate cable ties, and supported to prevent pressure or strain on the cable insulation. Wire all selector switches, limit switches, auxiliary contacts, etc., including spare devices, to the terminal block.

Control Device Requirements.

Motor Circuit Protector (CB-1):

The local controls at each swing gate shall include a three-pole motor circuit protector (MCP) for the incoming three-phase 480 volts.

Located inside of swing gate housing shall be a three-pole incoming MCP power circuit breaker with a normally open (N.O.) auxiliary contact to close on a "TRIP" or "OPEN" position. Contacts shall be rated not less than 0.5 amperes at 125 VDC.

Motor circuit protectors shall be manually operated and have a magnetic trip level adjustment. Trip ratings shown on the Contract Drawings are approximate and the trip rating provided shall be as recommended by the device manufacturer for the characteristics of the motor.

Motor circuit protectors shall be rated for an available fault current of 65,000 RMS symmetrical amperes.

Control Power Transformer (TR1):

Control power transformers shall be not less than 500 VA continuous duty and rated at 480V - 60 Hz primary to 120V single phase secondary. The control power transformer shall have a circuit breaker secondary and shall be sized adequately for the starter and all connected control devices. Control transformers shall be NEMA type AA, dry, with a temperature rise not to exceed 55 degrees C above a 40 degrees C ambient temperature at continuous rated load. Data submitted for approval shall include starter coil load data and total VA rating of control transformer.

Reversing Starter (MS-1):

Provide a reversing starter that is mechanically and electrically interlocked and rated for 480 Volts, 3 phase power, in a minimum NEMA size 1 configuration.

Starters shall be sized for the motor to be connected, but shall not be smaller than NEMA size 1. Starter size shall be carefully coordinated based on the motor characteristics of the motor to be connected and the manufacturer's starting ratings.

All starters shall be equipped with pull-apart terminal blocks for control and power wiring.

Starters shall be electrically operated, electrically held, with arc-extinguishing characteristics and renewable silver-to-silver contacts. Each starter shall have an overload relay as specified.

As a minimum each starter shall be equipped with two SPDT auxiliary contacts, with the N.C. contacts wired in as coil clearing contacts, in addition to the forward and reverse seal-in contacts. Provide two additional DPDT auxiliary contacts, one in each direction, as spares.

Provide an automatic reset non-compensated thermal overload relay with 480 V, 5 amp continuous duty contact rating. Provide additional auxiliary electrically isolated contacts rated at 120 V, 5 amp continuous duty, one normally dosed in motor control circuit and one normally open for monitoring by the Programmable Logic Controller. Relay shall be a NEMA B600 with three type B heater elements sized as required for the motor HP rating.

Motor control circuit shall operate at 120 volts derived from control transformer TR1, as specified.

Terminal Blocks (TB):

Terminal blocks shall be heavy duty corrosion resistant type rated at 600 volts AC & DC. AC and DC voltages shall be connected to color coded terminal blocks, separated and electrically isolated from each other. AC terminal housing shall be gray, and DC terminals shall be blue. Terminal block housing shall be manufactured from nylon capable of long term exposure of -40 degrees F to 180 degrees F, and all terminals shall be capable of terminating #22 through #6 AWG stranded or solid wire.

The current carrying metal body characteristics shall be as follows:

- a. Modular design and construction.
- b. Manufactured from a minimum of 85% copper alloy with locking screws manufactured from stress relieved brass.
- c. 100% nickel plated.
- d. Have self locking screws so that when wire is clamped into terminal, self loosening is not possible.
- e. Have wire guides on base body.
- f. Achieve "gas tight" termination, as wire is clamped into "serrated" metal body.
- g. Have center bridgeability
- h. Have no less than 3 milli-ohms of contact resistance.

The terminal blocks shall be as manufactured by Phoenix Contact or approved equal.

125 Volt DC Coil, Remote Control Relays (CR-1, CR-2, CR-3):

Provide electrically held, heavy duty relays rated at 300 V with a minimum of two normally open (N.O.) and two nominally closed (N.C.) independent electrically isolated contacts. The relay shall be hermetically sealed, with convertible, high reliability contact rates not less than 5 ampere resistive. Contact ratings shall be NEMA A300 AC, and NEMA P300 DC as per Contract Drawings.

Control Relay (CR-1), Located in the gate control enclosure. Interlace DC relay to allow remote ramp opening of the gate (PLC control or manual control from the Remote Control Building).

Control Relay (CR-2), Located in the gate control enclosure. Interface DC relay to allow remote ramp closing of the gate (PLC control or manual control from the Remote Control Building).

Control Relay (CR-3), Located in the gate control enclosure. Interface DC relay to allow remote PLC control of chevron sign. Shall be installed in each swing gate unit and connected in only selected swing gates.

Relays shall be as manufactured by Allen Bradley catalog #700-N or as approved by the Engineer.

Limit Switches - Cam Actuated (LS-5, LS-6, & spare LS-7, LS-8):

The gate cam actuated limit switch shall be a unit assembly containing a minimum of 4 individual switches each having one SPDT set of contacts. Contacts shall be totally enclosed and shall have a U.L rating of not less than 15 amperes at 220 volts AC. Each individual switch shall be controlled by an independent cam, which shall be adjustable with a single set screw. The limit switch body, cams and shaft shall be of corrosion resistant non-ferrous materials.

The multiple cam positron sensor assembly shall be operated from the drive transmission. Two of the switches normally closed (N.C.) (LS-5 & LS-6) shall function as motor overtravel limit switches. The other two switches shall be spares. Switches which are of different voltage type shall be isolated through the use of a spacer inserted between the switches.

Each switch shall be operated by an independent cam. The cams shall be position adjustable through 360 degrees of rotation. The signals from these position sensors shall de-energize the starting coils to the motor.

Cam Limit Switches shall be installed as shown on the Contract Drawings and as herein specified:

- a) Limit Switch LS-5, with one normally closed (N.C.) contact located on the retract cam position opens and disconnects power to the retract starting coil when the drive travels past the retract position (indicates a broken chain on the cam).
- b) Limit Switch LS-6, with one N.C. contact located on the extend cam position opens and disconnects power to the extend starting coil when the drive travels past the extend position (indicates a broken chain on the cam).

Standard Enclosed Limit Switches (LS-1A-1B, LS-2A-2B, LS-3, LS4, LS-9):

Standard Enclosed Limit Switches shall be NEMA 4 as required for outdoor installation (-40 to + 180 degrees F). Limit switches shall be heavy duty, Industrial type, oil and water tight, with a minimum 10 amp, 125 volt DC rating, and rated for one million operations. No electronic switches shall be used.

Standard Enclosed Limit Switches shall be installed as shown on the Contract Drawings and as herein specified:

- a) Standard limit Switch LS-1, with one normally open (N.O.) (LS-1A) and one normally closed (N.C.) (LS-1B) independent electrically isolated contacts, located on gate arm inner rotating shaft. LS-1A contact is held closed when the gate is NOT in the retract position. When the gate arm moves to the retracted position (ramp open), the held closed N.O. LS-1A contact opens and disconnects power to the retract starting coil. And the held open N.C. LS-1 B contact closes signaling the Programmable Logic Controller that the Crank Arm is in the retracted (ramp open) position.
- b) Standard Limit Switch LS-2, with one N.O.(LS-2A) and one N.C.(LS-2B) independent electrically isolated contacts, located on gate arm Inner rotating shaft. LS-2A contact is held closed when the gate is NOT in the extent position. When the gate arm moves to the extended position (ramp closed), the held closed N.O. LS-2A contact opens and disconnects power to the extend starting

coil. And the held open N.C. LS-2B contact closes signaling the PLC that the Crank Arm is in the extended (ramp closed) position.

- c) Standard limit switch LS-3, with one N.C. contact, located on the gate arm outer rotating it shaft. LS-3 is held open when the gate arm is NOT in the retracted position. When the gate arm moves to the retracted position, the held open LS-3 contact closes and signals the PLC that the gate arm is in the retracted position (Input to PLC constant from + 10 degrees of fully retracted).
- d) Standard Limit Switch LS-4, with one N.C. contact, located on the gate arm outer rotating shaft. LS-4 is held open when the gate arm is NOT in the extended position. When the gate arm moves to the extended position, the held open LS contact closes and signals the PLC that the gate arm is in the extended position (Input to PLC constant from -10 degrees of fully extended).
- e) Standard Limit Switch LS-9, with two N.C. independent electrically isolated contacts (LS-9A & LS-9B), located at the hand crank opening. When the hand crank is inserted, LS-9A opens and disables the motor control circuit and LS-9B opens and disconnects signal to the PLC.

Standard Limit Switches shall be as manufactured by Allen Bradley Bulletin 802M or approved equal.

Remote/Local Control Selector Switch (SS-1):

Selector switch shall be NEMA 4/13 heavy duty type, two position maintained contact, rated at 600 volts AC. Provide and wire auxiliary contacts to the terminal block to permit transmission of the selector switch position to the remote control system.

Selector Switch (SS-1), Located on door of swing gate local control enclosure. Two position selector switch intended to be used for maintenance and local gate control. To allow the gate to be switched to local control (LOCAL MANUAL CONTROL), or to remote building control (REMOTE CONTROL).

Remote Control Switch (SS-2):

Remote control switch shall be NEMA 4/13 heavy duty type, three position spring return to center, rated at 600 volts AC. Provide and wire auxiliary contacts to the selector switch (SS-1) to permit transmission of the selector switch position to the remote/local control system.

Selector Switch (SS-2), Located on door of swing gate local control enclosure. Three Position, spring return to center, selector switch that allows (MANUAL OPEN), (MANUAL CLOSE), when SS-1 is in the "LOCAL MANUAL CONTROL" position.

Rotary ON/OFF Pilot Switch (SS-3):

Rotary Pilot switch shall be NEMA 4/13 heavy duty type, two position maintained contact, rated at 600 volts AC. Wire SS-3 auxiliary contacts to Selector switch (SS-1) via the Terminal strip.

Rotary Pilot Switch (SS-3), located on door of swing gate local control enclosure. Two position selector switch to turn DC power ON and OFF.

Circuit Breaker for the gate arm slot heater (CB-2):

A two-pole, 15 ampere, 600 volt circuit breaker shall be provided for the swing gate sandwich heater cable mounted on the barrier wall.

Circuit Breaker for 120 VAC control power (CB-3):

A two-pole, 5 ampere, 240 volt circuit breaker shall be provided on the secondary power feed, for the control power transformer TR1.

LED's. Provide high intensity, long life (10 year average) solid state LED cartridges with built-in resistors/rectifiers rated for 125 VDC. Mount LED's in a grouped configuration into the NEMA 4 cabinet as shown on the Contract Drawings.

Wiring for Power and Control. All wire shall be minimum number 14 AWG stranded copper, type MTW, 600 V insulation.

Sequence of Operations, Automatic.

Automatic Operation - Extend Gate (Close Ramp):

- a. Beginning state - swing gate retracted, ramp open.
- b. Requirements for automatic operation:
 - Selector Switch SS-00 "PLC CONTROL/OFF PLC CONTROL" (located in the Remote Control Building) in "PLC CONTROL" Position
 - Selector Switch SS-1 "REMOTE CONTROL/LOCAL MANUAL CONTROL" (located in the local swing gate control cabinet) in "REMOTE CONTROL" Position
 - Selector Switch SS-3 "ON/OFF" (located in swing gate control cabinet) in "ON" position
 - "Crank Arm Open Limit Switch" LS-1B Closed - PLC Input - Crank Arm in Open Position
 - "Gate Retracted Limit Switch LS-3 Closed" - PLC Input - Gate in Retracted Position
 - "Shear Pin Detector Proximity Switch" PRX-1 Closed - PLC Input - Shear Pin Detector Intact
 - Motor Circuit Protector CB-1 Aux Contact Open, and Motor Overload Relay MOL Aux Contact Open - No fault input to PLC
- c. PLC power output to swing gate terminal block #4, energize DC relay CR-3 and flashes Chevron Sign on and off. (PLC programmed logic turns relay on and off).
- d. PLC applies power to swing gate terminal block #2, energize DC relay CR-2. CR-2 contact closes and energizes starting coil MS-1R.
- e. The motor starts and the gate arm begins moving from the retracted to the extended position.
- f. When the gate moves 10 degrees from fully retracted, limit switches LS-3 and LS-1B signal inputs to the PLC that the gate is no longer in the retracted position.
- g. Power is continuous to relay CR-2, until limit switches LS-4 and LS-2B signal the PLC that the gate is in the extended position, or a pre-set time limit in the PLC has expired. Relay CR-3 is de-energized after all the gates are in the extended position, turning the chevron signs off.

Automatic Operation - Retract Gate (Open Ramp):

- a. Beginning state - swing gate extended, ramp closed.
- b. Requirements for automatic operation:
 - Selector Switch SS-00 "PLC CONTROL/OFF PLC CONTROL" (located in the Remote Control Building) in "PLC CONTROL" Position
 - Selector Switch SS-1 "REMOTE CONTROL/LOCAL MANUAL CONTROL" (located in the local swing gate control cabinet) in "REMOTE CONTROL" Position
 - Selector Switch SS-3 "ON/OFF" (located in swing gate control cabinet) in "ON" position
 - "Crank Arm Closed Limit Switch" LS-2B Closed - PLC Input - Crank Arm Closed
 - "Gate Extended Limit Switch" LS-4 Closed - PLC Input - Gate Extended
 - "Shear Pin Detector Proximity Switch" PRX-1 Closed PLC Input - Shear Pin Detector Intact
 - Motor circuit Protector CB-1 Aux. Contact Open and Motor Overload Relay MOL Aux. Contact Open. No fault input to PLC

- c. PLC applies power to swing gate terminal block #1, energize DC relay CR-1. CR-1 contact closes and energizes starting coil MS-1F.
- d. The motor starts and the gate arm begins moving from the extended to the retracted position.
- e. When the gate moves 10 degrees from fully extended, limit switches LS-4 and LS-2B signal inputs to PLC that the gate is no longer in the extended Position.
- f. Power is continuous to relay CR-1, until limit switches LS-3 and LS-1B signal the PLC that the gate is in the retracted position, or a pre-set time limit in the PLC has expired. Relay CR-1 is then de-energized, turning the motor off.

Manual Operating Requirements (Local Control):

- a. Open the housing access door.
- b. Set selector switch SS-1 in "LOCAL MANUAL CONTROL" position. (disconnects PLC outputs from the remote control building).
- c. Moving and holding the selector switch SS-2 in either the "MANUAL OPEN" or "MANUAL CLOSE" position, moves the gate arm in the extended or retract direction. Releasing the spring return switch stops all movement.
- d. To return to remote control, SS-1 must be switched to the "REMOTE CONTROL" position.
- e. Close the housing access door.

Manual Operating Requirements (Hand Cranking):

A hand crank shall be furnished with each swing gate to provide a means for manual operation of the gate arm in the event of a power or control failure, maintenance, or emergency operations. The hand crank shall connect to an extended output shaft from the transmission and shall require approximately 36 complete rotations to crank the gate arm 90 degrees. The crank arm shall not require more than 30 pounds of force per rotation. The following steps shall be required to position the hand crank for use:

- a. Open the housing access door.
- b. Open the port cover for crank arm.
- c. From outside the housing, insert the shaft of the crank through the port and onto the end of the transmission shaft. Automatically disconnects motor control circuit from operating remotely (LS-9 Opens). Mechanically releases brake.
- d. Crank the arm to the required position, until extended or retracted LED lights up, or until physical stop is reached.
- e. Remove the crank arm. Automatically re-energizes the control circuit (LS-9 Closes), and engages the brake.
- f. Replace the crank arm inside the housing, and close the access door.

Corrosion Protection. Aluminum components shall not be treated with corrosion inhibitors.

The Swing Gate Vendor's names and data plates, machined ways, and other machined surfaces, bright metal work, lubrication points, oilers, and sumps shall be protected against entry of coatings, dirt, or cleaning agents during coating application.

Basis of Payment. This work shall be paid at the contract unit price each for SWING GATE CONTROLLER, FURNISH ONLY, for either a clockwise (COO) or counter-clockwise (CCW) operating unit, which price shall be payment in full for furnishing and delivering the materials to State Stock as directed by the Engineer.

ASD1 SWING GATE DRIVETRAIN ASSEMBLY, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State Stock a complete swing gate actuator transmission, motor and crank arm, hereinafter referred to as a drivetrain assembly, as manufactured by B&B Electromatic, compatible with the existing swing gates.

Transmission. The gate actuator shall include but not be limited to a worm gear transmission with a double extended output shaft, reduction gears, and input shaft. The drive motor shall direct couple to the input shaft of the transmission. One of the output shafts of the transmission shall be connected to the swing gate crank arm assembly. The second output shaft shall be used for manual cranking of the gate arm.

The gate actuator transmission shall transfer the torque to the gate arm capstan via a linkage of the crank arm assembly which shall consist of two crank arms and an adjustable connecting rod having self-aligning ball ends. The crank arm assembly shall be factory pre-set for the specific gate location and gate arm angle. All linkage components shall be heavy-duty and shall permit field adjustment of the rotation of the gate arm from -5 to 95 degrees of rotation.

The gate actuator transmission shall be a totally enclosed unit designed and built for the required service. Gears shall conform with the requirements of AGMA and shall be oil bath lubricated with lightweight oil as applicable for the design temperatures. The transmission housing shall include, but not be limited to an oil fill plug and an oil drain plug. These items shall be located for easy access, from the ramp side access door during routine inspection and maintenance of the mechanism, without removing the housing or other components.

The connecting rod shall be fabricated from ASTM A311 Class B high strength steel.

The gate actuator shall incorporate sine wave motion to accelerate the gate arm smoothly from zero to maximum velocity at mid-stroke and then decelerate smoothly to zero velocity at full stroke. The drive shall be designed to rotate the gate arm through 90 degrees within 15 seconds and shall be capable of reversing of the direction of rotation from any point.

Actuator Drive Motors. The drive motors shall be flange mounted to their transmission cases. The motors shall be double extended shaft type, suitable for harsh environment use, as specified herein. An electric, solenoid released, motor brake shall be mounted to the other end of the motor.

Motors shall be squirrel cage induction type, 460 volt, 3-phase, 60 Hertz, High Slip, High Torque (NEMA design D), Totally Enclosed Non Ventilated, and shall have Class F insulation. Horsepower rating shall be not less than twice that calculated by the Swing Gate Vendor to meet specified design parameters. Motors shall be capable of operating the driven equipment over the full range of operating load conditions without exceeding the nameplate rating. Motors shall be flange mounted, attached to the transmission with at least four bolts, and shall be of the instant reversing type to permit reversing the movement direction at any point of travel.

The ratings, characteristics, materials, and construction of electric motors shall be in accordance with the latest applicable standards of ANSI, IEEE, and NEMA. The manufacturer's certification of the preceding shall be provided as a part of the submittal data.

Submittal data shall include complete manufacturer's specifications and descriptive bulletins for all equipment, size, capacity, description and make of motor. Motor data shall include the following:

- a. Manufacturer
- b. Nameplate Rated Horsepower
- c. Rated Voltage
- d. Full Load RPM
- e. Full Load Current
- f. NEMA Design Letter
- g. NEC Code Letter or Inrush Current
- h. Insulation Class
- l. Service Factor
- j. Recommended Starting Restrictions, including Allowable Starts Per Hour
- k. Design Load Calculations

The motor shall be equipped with an electric solenoid actuated type brake which shall automatically release when the gate arm starts to move out of position under power and shall automatically set when the gate arm reaches the opened or closed position. The brake shall have the same operating voltage rating as the drive motor. A means shall be provided to mechanically release the brake, in the case of control power failure, to permit use of the hand crank for manual operation. The solenoid brake shall be sized to hold the gate arm in position under the forces produced by the wind loads as described elsewhere herein.

Motor bearings shall be designed to withstand all axial thrust from the driven equipment.

Basis of Payment. This work shall be paid at the contract unit price each, for GATE DRIVETRAIN ASSEMBLY, FURNISH ONLY, which price shall be payment in full for furnishing and delivering the materials to State stock as directed by the Engineer.

ASG1-6 SWING GATE ARM, FURNISH ONLY

Description. This item is for furnishing and delivering to State Stock swing gate arms with gate tips of various lengths for the Kennedy Expressway REVLAC System as specified herein.

Materials. The swing gate arm shall consist of an aluminum reflectorized area. The swing gate materials shall be compatible with swing gate controller Model Number HZ64B (Referenced drawing No. 0100DD0037 - latest version) as manufactured by B&B Electromatic, Norwood, Louisiana. The swing gate arms are constructed having the following standard lengths: 2 ft., 4 ft., 5 ft., 6 ft., 7 ft., 8 ft., 9 ft., 10 ft., 11 ft., 12 ft., 13 ft., 14 ft., 15 ft., 16 ft., 17 ft., 18 ft., 19 ft., 20 ft., 21 ft., 22 ft. and 23 ft.

Swing Gate Arms. Gate arms shall consist of an assembly of standardized design, standard length, segmented truss structures, connectors, brackets, and a three foot long flexible gate tip. Gate arm truss assemblies, as shown on the Contract Drawings and as specified, shall include both the gate arm truss segments and the gate tips.

Each gate arm truss segment shall be 12 Inches high and configured as generally shown on the Contract Drawings. The truss segments shall form a welded structural fabrication of 6061-T6 extruded seamless aluminum tubing having a minimum allowable yield strength of 40,000 pounds per square inch (psi). The segments shall be constructed to prevent accumulation of water within the structural tubes. The minimum allowable size of the materials shall be as shown on the Contract Drawings.

The truss segments shall be interchangeable to permit assembling the gate arms to the specified lengths. The segments shall be provided with the reflective sheeting on both sides of the truss and the stripes properly oriented to allow either side to face the traffic.

Each assembled gate arm shall be designed to resist the loads described herein and meet the following additional requirements:

- a) The free end of the assembled gate arm shall not sag more than 0.75 inches, below horizontal, under its own weight.
- b) The longest gate arm assembly, excluding the flexible gate tip, shall not deflect more than 36 inches, horizontally, in the specified wind loads.
- c) The free end of the longest gate arm assembly shall not sag more than two inches, below horizontal, when covered with ice as described elsewhere herein.
- d) The maximum allowable design stress of the gate arm shall be calculated as 60 percent of the yield strength of the material (6061-T6 extruded seamless aluminum tubing has a yield strength of 40,000 psi; therefore, the design stress of the arm shall not exceed 24,000 psi).
- e) The gate arms shall be free of harmonics and standing wave vibrations. Should any such harmonics and vibrations develop, the Swing Gate Vendor shall make all necessary corrections at his own cost.

A gate arm truss shall be connected to its mounting bracket via an aluminum connector assembly. The connector shall be fabricated from the same material as the gate arm truss segment and shall be bolted to the mounting bracket with stainless steel bolts, nuts and washers as described below. The attachment bracket may be shimmed, if required, to adjust for deflection caused by the weight of the gate arm assembly. The Swing Gate Vendor shall supply a shim pack, as needed, for each arm assembly. Shimming of a gate arm is limited by the physical constraints of the gate arm recess formed in the barrier wall. Whether shimmed or not, all gate arms shall completely retract into the barrier wall recess. Rubber bumpers shall also be provided with each gate arm to prevent the gate arms from damage when they are retracted. A Teflon gasket shall also be provided for the gate arm to mounting bracket connection.

The use of exterior supports or attachments (such as guy wires) to remove sag from the gate or for any other reason is unacceptable.

Gate arms shall be connected, with an aluminum insert of the same material as the gate arm, as shown on the Contract Drawings. The insert shall be bolted to the truss segments with stainless steel bolts, nuts, and washers as described below.

The gate tip is furnished under this pay item. Flexible gate tips shall be connected to the end truss segment using the connector assembly as shown on the Contract Drawings. The assembly, truss segment, and gate tips shall be bolted together with 0.5 inch diameter stainless steel bolts, nuts, and washers. One washer shall be placed under the bolt head and a lock washer shall be placed under the nut. The nuts and bolts shall be hand tightened until snug and further tightened with a wrench a minimum of 1/2 turn of the nut.

Reflective Materials for Gate Arms. Both sides of each gate arm, including both the truss and the flexible end, shall be covered with retro-reflective sheeting. All sheeting requirements shall meet or exceed the standards as defined in AASHTO M 268-84, Retroreflective Sheeting for Traffic Control.

The sheeting shall be a minimum of Type III High Intensity with pre-coated, pressure sensitive, adhesive (Class 1), diagonal alternating red and silver white stripes as shown on the Contract Drawings, angling down at 45° from left to right. The sheeting shall be oriented to take advantage of the directional reflectivity of the material as defined by the supplier of the reflective sheeting.

The material for this application shall be "Scotchlite" Reflective Sheeting Diamond Grade Series 3970G as manufactured by 3M, or approved equal. The sheeting shall be pre-stripped of appropriate size and width to match the application surface. The retro-reflective sheeting shall be installed strictly according to the manufacturer's instructions. Provide special attention to surface preparation and mounting of sheeting for proper bonding and adhesion.

Basis of Payment. This work shall be paid at the contract unit price each for complete SWING GATE ARM and tip, for the length specified:

SWING GATE ARM, (2 FT.) TO (4 FT.), FURNISH ONLY	(ASG1)
SWING GATE ARM, (5 FT.) TO (8 FT.), FURNISH ONLY	(ASG2)
SWING GATE ARM, (9 FT.) TO (12 FT.), FURNISH ONLY	(ASG3)
SWING GATE ARM, (13 FT.) TO (16 FT.), FURNISH ONLY	(ASG4)
SWING GATE ARM, (17 FT.) TO (20 FT.), FURNISH ONLY	(ASG5)
SWING GATE ARM, (21 FT.) TO (23 FT.), FURNISH ONLY	(ASG6)

which price shall be payment in full for furnishing and delivering the materials to State Stock as directed by the Engineer.

ASG7 SWING GATE ARM CAPSTAN AND BRACKET ASSEMBLY, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to State stock a complete swing gate arm capstan and mounting bracket assembly Model No. HZ-64B as manufactured by B&B Electromatic, reference drawing numbers 0100DD0537 and 0064DD0072 latest revision.

Gate Arm Capstan and Mounting Bracket. The gate arm capstan shall be composed of two rotating shafts and one stationary support stanchion (tube) in a "shaft within a shaft" design.

The inner rotating shaft shall transfer the torque and rotary motion from the gate actuator crank arm to the outer rotating shaft which supports the gate arm. The upper end of the inner shaft shall extend through a flange bearing which is bolted to a support plate integral with the frame. Above the crank arm connection, the bearing shall be connected to the shaft with a Nyloc type set-screw. Spare set-screws shall be provided in the box provided for spare shear pins. Self Lubricating, all impregnated, radial bronze

bushings shall be used to maintain concentric alignment of the inner shaft relative to a stationary support tube. The upper end of the shaft shall extend past the bearing to provide for the gate position sensors.

The torque and rotary motion shall be transmitted between the inner and outer shafts through a shear connection consisting of two adjacent circular plates of identical metallurgical composition located at the bottom of both shafts. The plates shall be linked by shear pins. The shear pin holes in the plates shall match each other in only one position. Alignment holes shall be provided in both plates to assist shear pin replacement. The adjacent faces of the shear plates shall be ground to a smooth finish and coated with Teflon pipe thread compound or similar material, as approved by the Engineer, to minimize friction and corrosion between the plates.

The inner rotating shaft shall be fabricated from ASTM-A193-B7 solid alloy steel, turned, ground, polished, and machined as required, with a nominal outside diameter of not less than two inches. The upper end shall be connected to the crank arm using a key and two double set-screws placed 90 degrees apart (one cone point and one set point over top the cone point). The assembly to support the return spring and shear pins shall incorporate keys, rings, or other method approved by the Engineer, at the lower end of the inner shaft.

The stationary support tube shall be rigidly attached to the swing gate frame and incorporate a "keeper collar" to support both the support tube and the outer rotating shaft. The keeper collar shall be bolted through the support tube and into the frame of the swing gate. Self lubricating, oil impregnated, radial bronze bushings shall be located on the exterior at both ends of the support tube to maintain concentric alignment of the outer shaft and the support tube. A self lubricating, oil impregnated, bronze thrust bushing shall be located inside the keeper collar where the outer rotating shaft is supported, to maintain a smooth surface upon which the outer shaft shall ride.

The stationary support tube shall be fabricated from ASTM-A519 steel alloy, machined as required, with a nominal outside diameter of not less than 4.5 inches and a wall thickness of not less than 0.5 inches; it shall be rigidly bolted to the frame of the swing gate using ASTM A-325 bolts, nuts and washers.

The outer rotating shaft shall be supported from the keeper collar of the support tube and shall extend to the shear plate of the inner rotating shaft. The gate arm mounting bracket shall attach to the exterior of the outer rotating shaft as described below.

The outer rotating shaft shall be fabricated from ASTM-A519 steel alloy seamless tubing, machined as required, with a nominal outside diameter of not less than six inches and a wall thickness of not less than 0.5 inches. A circular steel plate shall be fabricated from ASTM A656 GR80, welded to the lower end of the outer rotating shaft, and have the shear pin mounting holes drilled and reamed. The shear pin holes shall match the holes for the inner shaft in only one position. Another circular steel plate (ASTM A656 GR80) shall be welded to the upper end of the outer shaft to transfer all axial loads into the swing gate frame via the thrust bearing.

The gate arm mounting bracket shall be fabricated from ASTM A36 steel not less than 0.25 inches thick. The bracket shall be fabricated in two halves and shall be hot dip galvanized after complete fabrication. The halves shall be bolted together with a minimum of eight, 0.5 inch diameter, ASTM-A325 bolts, Type 1 or 2. The bracket shall be clamped to the outer shaft of the capstan. The frictional force developed in the clamped connection shall be sufficient to hold the gate arm in position and resist all live and dead loads imposed on the gate. A teflon gasket shall be provided and installed at the end of the bracket, where the aluminum gate arm assembly attaches to the bracket, to isolate the dissimilar metals.

An adjustable disc shall be attached to the swing gate inner rotating shaft. Adjustable position sensing limit switches shall be used to stop the drive motor at the gate arm extended and retracted positions (ramp closed and ramp open).

A second adjustable disc shall be attached to the swing gate outer rotating shaft. Adjustable position sensing limit switches shall be furnished and installed to provide a control input for monitoring the gate position to -10 degrees of fully extended and +10 degrees of fully retracted, by the remote control system.

Basis of Payment. This work shall be paid at the contract unit price each for SWING GATE ARM CAPSTAN AND BRACKET ASSEMBLY, FURNISH ONLY, for either a clockwise (COO) or counter-clockwise (CCW) operating unit, which price shall be payment in full for furnishing and delivering the materials to State stock as directed by the Engineer.

AV01 VIDEO COMMUNICATION HUT, FURNISH AND INSTALL

Description. This item shall consist of furnishing and installing a video communication hut, precast concrete, 11'-3" X 14' interior dimensions. The equipment in the hut shall include 200 A Main Service Disconnect Switch and distribution panel, two three ton air conditioning units with lead-lag controller and 5 kW electric heater, smoke alarm, four 4' fluorescent fixtures, three convenience outlets, heavy duty 18 gauge metal door and frame with panic bar and door closer, emergency light and fire extinguisher. The hut shall be designed to withstand a floor live load of 250 PSF, a roof load of 65 PSF, and a wind load of 110 MPH.

Panelboards shall be in conformance with the NEC shall be UL listed and shall conform to Federal Specification W P 115b. Panelboards used for service entrance shall be UL listed for use as service entrance equipment. Panelboards shall be of dead front construction, providing access to the wiring compartment without exposing bus.

Boxes (tubs) shall be code gauge galvanized steel with ample wiring space and knock outs all in conformance with UL 50. Fronts shall be code gauge steel with a hinged door and a cylinder lock. The front shall have a grey finish over a rust inhibitor. The interior of the door shall have a circuit directory in a frame with a clear plastic cover. Boxes and fronts shall be suitable for surface or flush mounting as indicated and where no other indication in made, panels shall be surface mounted.

Unless otherwise indicated, phase bus bars may be copper or aluminum, sized as shown or as required by UL standards, whichever is larger. Neutral shall have a solid bar with a separate connector for each pole of panelboard branch circuit space. Phase bus shall be for bolt on branch circuit breakers. A ground bar shall be provided for all panels.

Unless otherwise specifically indicated, each panelboard shall be provided with a main breaker sized at the panel bus rating.

Unless otherwise indicated, branch circuits shall be arranged in parallel vertical rows with alternate phasing. Branch circuit protective devices shall be bolted on circuit breakers unless otherwise indicated and these devices shall be interchangeable and removable without disturbing adjacent devices.

Panelboards operating at 240 volts phase to phase or less shall be rated at 240 volts AC with circuit breakers rated at 240 volts AC and, unless otherwise indicated, these circuit breakers shall have UL listed interrupting rating of not less than 22,000 RMS symmetrical amperes at 240 volts.

Unless otherwise indicated, panelboards operating at 480 volts shall be rated at 600 volts and with circuit breakers rated at 480 volts and, unless otherwise indicated, these circuit breakers shall have a UL listed interrupting rating of not less than 25,000 RMS symmetrical amperes.

Circuit breakers shall be molded case type, bolt on, with trip free handles and visual trip indicators.

This specification shall apply to all circuit breakers which are not integral to panelboards.

Circuit breakers shall be UL listed, molded case, thermal magnetic, manually operated circuit breakers of the trip ratings shown or indicated. Unless otherwise indicated, circuit breakers shall be 3 pole. Unless otherwise indicated, circuit breakers shall be rated for use on 480 volt circuits. Multi pole circuit breakers shall have a common trip and single operating handles. Handles shall be trip free. Circuit breakers in 250 ampere frames and above shall have an adjustable magnetic trip setting. The circuit breakers shall

indicate "ON", "OFF", and "TRIPPED" conditions. Unless otherwise indicated, circuit breakers shall have a UL listed interrupting rating of not less than 25,000 RMS symmetrical amperes at 480 volts. Where indicated or where required for indicated functions, circuit breakers shall be equipped with accessories such as shunt trips, auxiliary switches, and under voltage release.

Unless otherwise indicated, transformers shall be general purpose dry type, 2 winding, of the capacities and voltage indicated.

Transformers 15KVA and below shall be indoor/outdoor type and those above 15KVA shall be indoor type unless otherwise indicated.

Unless otherwise indicated, transformers 3KVA and above shall have not less than four 2 1/2% taps in the high voltage winding, two above and two below rated primary volts.

Transformers shall be UL listed and shall meet all applicable NEMA, ANSI, UL, and IEEE standards.

Unless otherwise indicated, transformers shall have 220 degrees C Class insulation but shall be designed for a maximum temperature rise of 115 degrees C, over an ambient temperature of 40 degrees C.

Duplex convenience receptacles shall be premium specification grade with wide heavy wrap around support bridge, large deep slot terminal screws which permit back or side wiring, heavy walled area body and ground terminal lug. They shall conform to Federal Specification W C 596 Style X2 and NEMA Standard WD 1 1965. Unless otherwise indicated they shall be brown, 2 pole, 3 wire, NEMA configuration 5 20R, 20 ampere, 125 volt.

Receptacles installed outdoors or otherwise exposed to the weather shall be installed with weatherproof flap type covers and shall be of the Ground Fault Circuit Interrupter (GFCI) type, unless otherwise indicated.

Unless otherwise indicated, receptacles shall be installed with their centers 48 inches above the finished floor.

Clock receptacle shall be 3-wire, 15-ampere, 125-volt with hanger and flush stainless steel plate for each clock.

Toggle switches shall be premium specification grade with large deep slot terminal screws, silver cadmium oxide contacts and a rugged molded plastic body. The switches shall conform to Federal Specification W S 896, Specification Sheet W S 896/3. Unless otherwise indicated, the switches shall be single pole single throw (SPST), 20 ampere, with brown handles, rated for 120 277 volts AC only.

Switches installed outdoors or otherwise exposed to the weather shall have NEMA 4 covers. Switches in hazardous locations shall meet the NEC Class I, Division 1, Group D requirements.

Unless otherwise indicated, toggle switches shall be installed with their centers 48 inches above the finished floor.

Lighting fixtures shall be as indicated on the Drawings and they shall be provided complete with lamps and all necessary fixture wire for connection.

Fluorescent fixtures shall have spring loaded, high quality sockets which will hold lamps in place securely, even under conditions of vibration.

Lenses, shall be virgin acrylic.

Fixtures shall be complete with the frames, flanges, fittings, etc., required for the indicated installation. The fixtures shall be carefully examined for coordination with architectural and structural work.

Fluorescent ballasts shall be Standard Type ballasts as specified herein. Standard Type ballasts shall be UL listed, high power factor Certified Ballast Manufacturers (CBM) certified Class P ballasts with integral thermal protection.

Energy saving (high efficiency) fluorescent ballasts shall be used. These ballasts shall be of the standard core and coil type (non electronic) and shall be UL listed, high power factor, Certified Ballast Manufacturers (CBM) Certified Class P Ballasts with integral thermal protection. Ballasts shall be of the manufacturer's series for which the two lamp F40 size, when tested in accordance with ANSI C82.2, will have listed input watts of not more than 72 watts.

Fluorescent fixtures shall be for operation on a 120 volt supply.

The hut shall comply with latest applicable codes. The hut shall be Oldcastle Precast Communications Model 1215, or approved equal.

Installation. The installation shall include all work to install a foundation, as per manufacturer's recommendation, and hut for a complete system at a location designated by the Engineer. All hardware, wiring and mounting brackets shall be included in this item and not paid separately.

Basis of Payment. This work will be paid for at the contract unit price each for, VIDEO COMMUNICATION HUT, FURNISH AND INSTALL, of the type indicated, which price shall be payment in full for furnishing and installing the unit as specified herein and as directed by the Engineer.

AXB1 BUDGETARY ALLOWANCE FOR PLC CONTROL SYSTEM REPAIR

Description. This item is to establish a budget account to allocate funds for the payment of repair to the existing Allen-Bradley PLC control system. A budgetary allowance has been established since it is unknown if repair will be needed and/or a specialty contractor service.

This allowance will not be used to repair damage caused by the Contractor's operations. Damage caused by the Contractor's operations shall be repaired at not additional cost to the Contract.

The total estimated amount of the annual expenses for services performed which will be paid under Article 6.0, is \$70,000 as indicated for Pay Item AXB1. For bidding purposes this amount shall be used.

AXB2 BUDGETARY ALLOWANCE FOR COMMUNICATION SYSTEM REPAIR

Description. This item is to establish a budget account to allocate funds for the payment of repairs to the existing communication system. A budgetary allowance has been established since it is unknown if repair will be needed and/or a specialty contractor service.

This allowance will not be used to repair damage caused by the Contractor's operations. Damage caused by the Contractor's operations shall be repaired at not additional cost to the Contract.

The total estimated amount of the annual expenses for services performed which will be paid under Article 6.0, is \$80,000 as indicated for Pay Item AXB2. For bidding purposes, this amount shall be used.

AXB3 BUDGETARY ALLOWANCE FOR UPS AND OTHER BUILDING EQUIPMENT REPAIRS

Description. This item is to establish a budget account to allocate funds for the payment of the specialty services for repairing or replacing UPS, and other equipment at REVLAC and RACS buildings and communication huts.

This allowance will not be used to repair damage caused by the Contractor's operations. Damage caused by the Contractor's operations shall be repaired at no additional cost to the Contract.

The total estimated amount of the annual expenses for services performed which will be paid under Article 6.0, is \$60,000 as indicated for Pay Item AXB3. For bidding purposes this amount shall be used.

AXB4 BUDGETARY ALLOWANCE FOR RAMP GATES

Description. This item is to establish a budget account to allocate funds for materials and/or repairs for damage to ramp gates and attenuators since there is little motorist caused damage history.

The total estimated amount of the annual expenses for services performed which will be paid under Article 6.0, is \$70,000 as indicated for Pay Item AXB4. For bidding purposes this amount shall be used.

GAC1 AERIAL CABLE WITH MESSENGER WIRE

Description. This item consists of furnishing, installing, testing and connecting aerial electric cable of the size indicated for temporary lighting or service as specified by an Engineer, and as shown on the contract drawings. The cable shall be new, unless otherwise indicated.

Materials. Section 818 and 1066 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Method of Measurement. The aerial electric cable will be measured in feet in place and will be taken as the length of the messenger wire. Measurement will be made in a straight line between changes in direction and to the centers of light standards and control cabinets. Sag of the aerial cable or vertical cable will not be measured for payment. When the Engineer requests the used temporary cable be replaced with new, the new cable shall be measured for payment. Used aerial cable will not be measured for payment but shall be included in the cost of the item.

Basis of Payment. This item will be paid at the contract unit price per foot for AERIAL CABLE WITH MESSENGER WIRE, 4-1/C up to NO. 2 of the size and number of conductors indicated which shall be payment in full for the work described herein.

The cost of disconnecting and abandoning in place the existing cables feeding underpass, sign, and ramp lighting and reconnecting to the temporary lighting system shall be included in the contract unit price for this item.

The cost of removing the used cable shall be included in the cost of the new cable. The rewiring to facilitate relocation of the cable due to staging or other construction requirements shall be included in the cost of this item.

GAS1 ASPHALT, REMOVE AND REPLACE

Description. This item shall conform to the applicable requirements of Section 408, 440, and 441 of the Standard Specifications for Road and Bridge construction. The asphalt removal and replacement shall be completed at locations shown on the plans, including necessary labor and materials, as directed by the Engineer. The base for the asphalt driveway, if required shall be prepared as per Article 358.

Basis of Payment. This work will be paid for at the contract unit price per square foot for ASPHALT, REMOVE AND REPLACE, which price includes all labor, material and equipment necessary to remove and dispose of the existing asphalt and to construct the new asphalt as specified herein. Preparation of base will be paid for according to Article 358.07.

GC01–GC06 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE

Description. This item shall consist of furnishing and installing galvanized steel or PVC coated conduit, fittings and accessories attached to structure for roadway or building, as specified herein and as shown on the contract drawings. All conduit splices shall be threaded as directed by the Engineer.

These items shall conform to Sections 1088 and 811 of the Standard Specifications for Road and Bridge Construction, current version, for this pay item, with the following exceptions:

Add the following to Article 811.03(b) of the Standard Specifications: "The personnel installing the PVC coated conduit shall be certified by the conduit manufacturer for installing PVC coated conduit."

Delete the following sentence of the third paragraph of Article 1088.01(a) (3) of the Standard Specifications: "The exterior galvanized surfaces shall be coated with a primer before the PVC coating to ensure a bond between the zinc substrate and the PVC coating."

Conduit Wall Seals. Conduit wall seals shall be incidental to the conduit specified under this item. Conduit wall seals used in new concrete walls shall consist of a polyvinylchloride (PVC) oversize sleeve with sealing assemblies at both sides of the wall. The sealing assemblies shall be cast iron alloy or malleable iron with pressure rings and neoprene sealing grommets, membrane clamp and they shall be tightened by means of hex-head screws. Each wall seal shall accept multiple conduit sizes. The sealing assemblies' castings shall be hot-dip galvanized.

Conduit wall seals used in cored holes in existing concrete shall consist of an assembly of an oversize outside pressure disc with membrane clamp, a neoprene sealing ring and an interior pressure disc, with the discs tightened by means of not less than three stainless steel socket head cup tightening screws with stainless steel washers. Pressure discs shall be PVC-coated steel.

Installation. These items shall conform to Sections 811 of the Standard Specifications for Road and Bridge Construction, current version, for this pay item, with the following exceptions.

Method of Measurement. Conduit shall be measured for payment in feet in place. Measurements shall be made in straight lines along the centerline of the conduit between ends and changes in direction. Vertical conduit shall be measured for payment. Liquid-tight flexible conduit shall be included in the bid price for conduit attached to structure regardless of size and type.

Basis of Payment. This work will be paid at the contract unit price per foot of CONDUIT, GALVANIZED STEEL or PVC coated, attached to structure for roadway or building, of the type, diameter, and number of raceways wide by the number of raceways high, which price shall be payment in full for furnishing and installing the galvanized steel conduit and fittings complete.

- GC01 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE, ¾ TO 1 ¼"
- GC02 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE, 1 ½ TO 2 ½"
- GC03 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE, 3 TO 5"
- GC04 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE, PVC COATED, ¾ TO 1 ¼"
- GC05 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE, PVC COATED, 1 ½ TO 2 ½"
- GC06 CONDUIT, GALVANIZED STEEL, ATTACHED TO STRUCTURE, PVC COATED, 3 TO 5"

GC07–GC08 CONDUIT, GALVANIZED STEEL, ENCASED IN CONCRETE

Description. This item shall consist of furnishing and installing raceways, fittings and accessories encased in concrete as specified herein and as shown on the contract drawings.

Materials. These items shall conform with Section 810 and 1088.01 (a), (b), and (c) of the Standard Specifications for Road and Bridge Construction, Current version, for this pay item, with the following exceptions:

Method of Measurement. Conduit shall be measured for payment in feet in place. Measurements shall be made in straight lines along the centerline of the conduit between ends and changes in direction. Vertical conduits shall be measured for payment. Liquid-tight flexible conduit shall be included in the bid price for conduit attached to structure regardless of size and type.

Basis of Payment. This work shall be paid at the Contract unit price per foot for furnishing and installing:
GC07 CONDUIT, GALVANIZED STEEL, ENCASED IN CONCRETE, ¾ TO 2 ½"
GC08 CONDUIT, GALVANIZED STEEL, ENCASED IN CONCRETE, FROM 3" TO 5"
of the type, diameter, and number of raceways wide by the number of raceways high specified, which shall be payment in full for the work as described herein.

GC09–GC10 CONDUIT, GALVANIZED STEEL, IN GROUND

Description. This item shall consist of furnishing and installing galvanized steel conduit, fittings and accessories in the ground, either pushed, trenched, plowed, or directionally bored with fittings complete as specified herein and as shown on the contract drawings. All conduit splices shall be solid threaded couplings as directed by the Engineer. Trenching, backfilling and restoration are incidental to this pay item in accordance with the District 1 Traffic Signal Specifications.

These items shall conform to Sections T420 and T642 of the Traffic Specifications and District 1 Traffic Signal Specifications, except as herein revised. All conduits shall be placed at a depth of thirty inches, except under railroad tracks the conduit shall be a minimum of five feet.

Add the following to Article 811.03 of the Standard Specifications: "Pavement, driveways, sidewalk, and curbs shall not be removed to install electrical conduits."

Method of Measurement. Conduit shall be measured for payment in feet in place. Measurements shall be made in straight lines along the centerline of the conduit between ends and changes in direction. Vertical conduits shall be measured for payment. Liquid-tight flexible conduit shall be included in the bid price for conduit attached to structure regardless of size and type.

Basis of Payment. This work will be paid at the contract unit price per foot for CONDUIT, GALVANIZED STEEL, IN GROUND of the type, diameter, and number of raceways wide by the number of raceways high, which price shall be payment in full for furnishing and installing the galvanized steel conduit either pushed, trenched, plowed or directionally bored with fittings, complete. Trenching, backfilling and restoration, including removal and replacement of sidewalk are incidental in accordance with the District 1 Traffic Signal Specifications.

GC09 CONDUIT, GALVANIZED STEEL, IN GROUND, ¾ TO 2 ½ INCH

GC10 CONDUIT, GALVANIZED STEEL, IN GROUND, 3 TO 5 INCH.

GC11–GC12 CONDUIT, NON-METALLIC, COILABLE, IN GROUND

Description. This item shall consist of furnishing and installing coilable non-metallic, fittings and accessories in the ground, either pushed, trenched, or directionally bored with fittings complete as specified herein and as shown on the contract drawings.

Materials. These items shall conform with Sections T420 and T642 of the Traffic Specifications and District 1 Traffic Signal Specifications, except herein revised. All conduit shall be placed at a depth of thirty inches, except under railroad tracks the conduit shall be a minimum of five feet.

Also, these items shall conform to Sections 1088 and 810 of the Standard Specifications for Road and Bridge Construction, Current version, shall apply to this pay item, with the following exceptions:

The duct shall be a plastic duct which is intended for underground use and which can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance. The duct and its manufacture shall conform to the standards of NEMA Publication TC7 and ASTM Designation D3485.

The duct shall be made of high density polyethylene which shall meet the requirements of ASTM Designation D 1248, Type III Class C and the requirements listed in table 2-1 of NEMA TC7. Submittal information shall demonstrate compliance of these requirements.

Duct dimensions shall conform to the standards listed in table 2-2 of NEMA TC7. Submittal information shall demonstrate compliance with these requirements.

As specified in NEMA TC7, the duct shall be clearly and durably marked at least every 10 feet with the material designation (HDPE for High Density Polyethylene), nominal size of the duct and the name and/or trademark of the manufacturer.

Method of Measurement. Conduit shall be measured for payment in feet in place. Measurements shall be made in straight lines along the centerline of the conduit between ends and changes in direction. Vertical conduits shall be measured for payment. Liquid-tight flexible conduit shall be included in the bid price for conduit attached to structure regardless of size and type.

Coilable nonmetallic conduit installed in excess of the limits described will not be measured for payment.

Basis of Payment. This work will be paid for at the contract unit price per foot of CONDUIT, NON-METALLIC, COILABLE, IN GROUND, of the type, diameter, and number of raceways wide by the number of raceways high, which price shall be payment in full for furnishing and installing the conduit in ground, coilable non-metallic either pushed, trenched, or directionally bored with fittings complete. Trench and backfill will be paid for separately except the restoration of ground is incidental to this pay item.

GC11 CONDUIT, NON-METALLIC, COILABLE, IN GROUND, 1 ¼"

GC12 CONDUIT, NON-METALLIC, COILABLE, IN GROUND, 2"

GC13 CONDUIT, PVC, FOR BUILDINGS, 1", SCHEDULE 40

Description. This item shall consist of furnishing and installing rigid non-metallic conduit, fittings and accessories as specified herein and as shown on the contract drawings, exposed or embedded within or upon a building structure.

Materials. Rigid non-metallic conduit shall be manufactured in accordance with U.L. Standard 651 and NEMA TC2, accessories in accordance with UL 514 and TC-3, General Service Administration (GSA) WC-1094A, NEC Article 352 (Type RNC) and shall be U.L. listed and labeled Schedule 40 PVC.

Elbows and nipples shall conform to the specifications for conduit. The cost of fittings, couplings, elbows, nipples and other such conduit appurtenances shall be included in the bid unit price for conduit.

Conduit Wall Seals. Conduit wall seals shall be incidental to the conduit specified under this item. Conduit wall seals used in cored holes in existing concrete shall consist of an assembly of an oversize outside pressure disc with membrane clamp, a neoprene sealing ring and an interior pressure disc, with the discs tightened by means of not less than three stainless steel socket head cup tightening screws with stainless steel washers. Pressure discs shall be PVC-coated steel.

Installation.

General. Rigid non-metallic conduit shall be installed in conformance with the requirements of NEC Article 352, except where more stringent requirements are specified herein.

The ends of the conduit shall be cut square and thoroughly reamed before installation. All burrs and rough edges shall be removed.

Bends of rigid nonmetallic conduit shall be so made that the conduit will not be damaged and that the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with bending equipment identified for the purpose, and the radius of the curve of the inner edge of such bends shall not be less than that shown on Table 354.24 of the National Electrical Code.

Conduit joints shall be coupled. Connection to couplings, fittings and boxes shall be with a suitable-type cement inherently resistant to atmospheres containing corrosive agents.

Conduit runs shall have no more than 270 degrees of bends (the equivalent of three 90 degree bends) between pull points. Bends shall be long radius type unless specifically approved by the Engineer. Bends may be either factory-made bends or field bends using suitable bending apparatus.

Whenever possible, conduits shall be installed so as to drain to the nearest opening, box or fitting.

Fasteners used to mount conduit supports, and other associated items attached to the structure shall be suitable for the weight supported and shall be compatible with the structure material, i.e. wood screws shall be used for solid masonry or concrete and clamps shall be used for structural steel. Expansion anchors shall not be less than ¼ inch trade size and shall extend at least 2 inches into the masonry or concrete. Power-set anchors shall not be less than ¼ inch trade size and they shall extend at least 1 ¼ inch into the masonry or concrete.

Mounting. Unless otherwise indicated or specified, surface-mounted conduits shall be held in place by one-hole clamps and clamp backs. Conduits which are mounted to steel beams or columns shall be held in place by suitable beam clamps. Conduit entering the wet well area of the pump station shall be mounted using stainless steel clamps and clamp backs. All other clamps, clamp backs and beam clamps shall be of electro-plated malleable iron.

Unless otherwise indicated, conduits suspended from the structure shall be supported by trapeze or other hangers approved by the Engineer. Trapeze hangers shall be hot-sip galvanized steel channels or angle irons with conduits held in place by heavy-duty stainless steel U-bolts, nuts and lock washers. Trapeze hangers shall be hung using threaded stainless steel rods not less than 3/8 inch diameter and appropriate anchors or by other means approved by the Engineer.

Conduit supports shall be within 3 feet of each cabinet, panel, box, compression bell fitting. The maximum distance between supports shall be 3 feet.

Method of Measurement. Conduit shall be measured for payment in feet in place. Measurements shall be made in straight lines along the centerline of the conduit between ends and changes in direction. Vertical conduits shall be measured for payment.

Basis of Payment. This work shall be paid at the Contract unit price per foot furnished and installed CONDUIT, PVC, FOR BUILDINGS, 1 INCH, SCHEDULE 40, as indicated, which shall be payment in full for the work as described herein.

GC14 CONDUIT, REMOVAL

Description. This work shall consist of disconnecting, removing, dismantling and transferring off the site existing conduit, including connectors and appurtenances as herein specified and as directed by the Engineer. Except as otherwise indicated or directed by the Engineer, the existing conduit shall be deemed not salvageable upon removal and shall then be disposed of off the site.

Construction Requirements. No removal work shall be permitted without approval from the Engineer. Any damage resulting from the removal and/or transportation of the existing conduit and associated hardware, shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer. The Engineer shall be the sole judge to determine the extent of damage.

Method of Measurement. Conduit removal shall be measured for payment in feet in place. Measurements shall be made in straight lines along the centerline of the conduit between ends and changes in direction. Vertical conduit shall be measured for payment.

Basis of Payment. This item shall be paid at the contract unit price per foot for CONDUIT REMOVAL, including connectors and appurtenances, which shall be payment in full for the work as described herein.

GCC1 CONTROLLER, CALCIUM CHLORIDE PUMP

Description. This item shall consist of furnishing and installing an electrical control cabinet with control devices and wiring as shown on the plan prepared by an Engineer for Calcium Chloride pump in a maintenance yard facility as specified herein.

Materials. The completed controller shall be UL approved as an industrial control panel. The cabinet shall be single door design, wall mounted type, NEMA 4X, not less than 14 gauge Type 304 stainless steel. All external hardware shall be stainless steel. The cabinet shall adequately house all required components with ample room for arrangement and termination of wiring. A 60 percent fill capacity shall be the design guideline. The controller shall have all the components as shown on the electrical plan to operate remotely and manually the calcium chloride pump, refer to the Standard Specifications for Road and Bridge Construction, current version, section 1068.(e) for detailed operating criterion.

Method of Measurement. Each calcium chloride pump controller, inspected and approved by the Engineer, shall be counted, each, as a unit for payment, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for CONTROLLER, CALCIUM CHLORIDE PUMP, which shall be payment in full for furnishing and installing the controller, complete, as specified herein.

GCX1 COAXIAL CABLE

Description. This work shall consist of furnishing materials and labor for installation of coaxial cable exposed or within conduit as specified herein and indicated by the Engineer, complete with all connectors, connector sealant, termination at radio and antenna end and testing.

Materials. Cable shall be low loss (1.5 DB/100' AT 100 m Hz) 50 ohm Helix coaxial cable with flame retardant, foam dielectric, solid inner conductor and solid outer corrugated conductor. Coaxial cable shall be Times Microwave Systems Number LMR-1200 or Engineer-approved equivalent.

Interfacing connectors shall be of the same size and type as the cable, furnished and installed as needed and indicated by the Engineer. All connectors shall be furnished with an O-ring to seal out moisture.

All connectors installed outside or exposed to weather shall be furnished with a weatherproofing kit recommended by the manufacturer.

Installation. The cable shall be carefully installed to avoid damage to the cable jacket. Cable splices will not be allowed. The cable shall not be bent to a radius less than the manufacturer's recommended bending radius, either in permanent placement or during installation.

Fasteners used to mount exposed coaxial cable shall be compatible with the mounting structure material i.e. wood screws shall be used for wood, toggle bolts shall be used for hollow masonry, expansion bolts or power-set studs shall be used for solid masonry or concrete and clamps shall be used for structural steel. Wire tie-wraps are unacceptable. Cable shall be terminated, with the appropriate connectors, at the indicated radio and antenna.

Testing. After installation, the cable shall be tested as approved by the Engineer. Cable failing to pass the test shall be replaced with new cable at no additional cost.

Method of Measurement. The cable shall be measured for payment in feet in place. Measurements shall be made in straight lines between changes in direction and to the centers of equipment. All vertical cable and permissible cable slack shall be measured for payment. A total of 2 ft. slack shall be allowed for the end of a coaxial cable termination. Additional vertical distance for the height of conduit risers, etc., as applicable, will be measured for payment for equipment so mounted.

Basis of Payment. This work shall be paid at the Contract unit price per foot installed COAXIAL CABLE, ¾ TO 7/8 INCH, exposed or within conduit as specified, which shall be payment in full for the work as described herein.

GE01–GE02 ELECTRIC CABLE ASSEMBLY

Description. This item shall consist of furnishing and installing multi-conductor power cable, suitable for direct burial, in conduit or trench, as specified herein, complete with all testing. The cable shall be an assembly of insulated power conductors, plus an insulated ground wire cabled in accordance with UL 1277 with fillers and binder tape, and with a jacket overall. The cable shall be UL Listed for direct burial use and shall be rated 90 degrees C dry and 75 degrees C wet.

Materials. Materials shall be according to Article 1076.01 and 1066.06 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Installation. Section 870 of the Standard Specifications for Road and Bridge Construction, Current version, shall apply to this pay item, with the following exceptions:

Add the following to Article 870.03 of the Standard Specifications:

“Bored and Pulled. A remotely steerable, fluid cutting tunneling system is to be used to install the cable assembly. The tunneling system shall be electronically detectable and shall line the tunnel with a clay lining as it tunnels. The tunneling system shall be approved by the Engineer prior to its use.”

Method of Measurement. Electric cable assembly, in conduit or trench, shall be measured, per feet.

Basis of Payment. This item shall be paid at the contract unit price per foot for :
GE01 ELECTRIC CABLE ASSEMBLY, EPR, 3/C NO. 2, 1/C NO. 6 EPR GREEN
GE02 ELECTRIC CABLE ASSEMBLY, EPR, 3/C NO. 4, 1/C NO. 6 EPR GREEN
of the size and number of conductors indicated, which shall be payment in full for furnishing, installing in conduit or trench and testing the cable as specified herein.

GE03–GE07 ELECTRICAL CABLE IN CONDUIT, EPR

Description. This work shall consist of furnishing materials and labor for installation of electric cables in conduit as shown on the contract drawings or as otherwise indicated, complete with all splicing, identification, terminating and testing.

Sections 817 and 1066 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item, with the following exception(s):

Add the following to Article 1066.03(b) of the Standard Specifications:

Cable sized No. 2 AWG and smaller shall be UL listed Type RHH/RHW and may be Type RHH/RHW/USE. Cable sized larger than No. 2 AWG shall be UL listed Type RHH/RHW/USE."

Method of Measurement. The cable shall be measured for payment in feet, in place. Measurements shall be made in straight lines between changes in direction and to the centers of equipment. All vertical cable and permissible cable slack shall be measured for payment. A total of 6 ft. slack shall be allowed for the end of a run terminating at a panel and 4 ft. will similarly be allowed when terminating at a wall-mounted panel. Additional vertical distance for the height of conduit risers, etc., as applicable, will be measured for payment for equipment so mounted.

Basis of Payment. This item will be paid at the contract unit price per foot for furnish & installation of:

- GE03 ELECTRICAL CABLE, EPR, 1/C UP to No. 6
- GE04 ELECTRICAL CABLE, EPR, 1/C No. 4 to No.1
- GE05 ELECTRICAL CABLE, EPR, 1/C from No. 1/0 to No. 2/0
- GE06 ELECTRICAL CABLE, EPR, 1/C from No. 3/0 to No. 4/0
- GE07 ELECTRICAL CABLE, EPR, 1/C from No.250 to 500 MCM

of the size, number and type of conductors indicated, which shall be payment in full for the work as described herein.

GE08 ELECTRIC CABLE, PULL OR REMOVE

Description. This work shall consist of pulling and/or removing an existing electric cable from a conduit.

Method of Measurement. Electric cable in conduit, pull/remove, shall be counted, each, per feet.

Basis of Payment. This work will be paid for at the contract unit price per foot per electrical cable for ELECTRIC CABLE, PULL OR REMOVE, which price shall be payment in full for removing the electric cable complete. If two or more cables in a conduit are to be removed each cable will be measured for payment separately.

GE09 ELECTRICAL CABLE, THWN

Description. This work shall consist of furnishing materials and labor for installation of electric cables in conduit as specified herein and indicated by the Engineer, complete with all splicing, identification, terminating and testing.

Materials. All cables shall be U.L. listed as Type THHN or THWN per Standard 83, rated for 600 volts, 90 degrees C. dry and 75 degrees C. wet. They shall be suitable for installation in wet and dry locations, expose to the weather, and shall be resistant to oils and chemicals. It shall conform to the Federal

Specification J-C-30B. The U.L. listing mark, cable voltage, insulation type and ratings, as well as the cable size shall all be clearly printed on the cable in a color contrasting with the insulation color. Conductors shall be annealed uncoated copper per UL Standard 83 or 1063 and unless otherwise indicated, shall be Class B or Class C stranded. Conductors used for general building lighting and receptacle circuits may be solid.

Each cable shall be insulated with Polyvinyl Chloride (PVC) and sheathed with nylon complying with requirements of UL Standard 83 for Types THHN or THWN. The minimum thickness at any point, of the PVC insulation, shall be not less than 90 % of the specified average thickness.

Unless otherwise indicated, cable shall be solid full color coded via insulation color. Unless specifically approved by the Engineer, color coding of neutral and ground wires shall be by means of colored insulation, except where bare ground wires are indicated.

Branch circuit from panelboards, for lighting, receptacles and similar loads shall be color coded by mean of colored wire insulation. Colors shall be as selected by the Contractor but a sufficient number of colors shall be used such that wiring in common enclosures is clearly differentiated and color combinations or runs are generally not repeated. Care shall be taken in the phasing of combined-neutral circuit runs. Switched legs shall be differentiated form un-switched legs of a circuit.

Wiring shall be color coded by means of colored wire insulation as follows:

- "line": black
 - neutral: white
 - ground: green
 - others: color coded using a repeating color format as approved by the Engineer.
- Signal cable conductor insulation shall be color coded.

Quality Control. Submittal information shall include demonstration of compliance with all specified requirements. All cables shall be new, having been manufactured within the 18 months preceding the date of delivery to the site. All cables shall be delivered to the site in full reels. Cable on the reels shall be protected from damage during shipment and handling by wood lagging or other means acceptable to the Engineer. Reels shall be tagged or otherwise identified to show the UL listing.

Installation. Wires and cables shall be carefully installed to avoid damage to insulation and cable jackets as applicable. Wire lubricant shall be used when pulling wires into conduits. The lubricant shall be non-injurious to conduits, conductors, insulations or jackets and the lubricant shall be UL listed. Each run of cable shall have sufficient slack. Where a number of wires are trained through a box, manhole or handhole, they shall be bundled using appropriate cable ties and supported to minimize pressure or strain on cable insulation. Wire and cable shall not be bent to a radius less than the manufacturer's recommended bending radius, either in permanent placement or during installation. Cable pulling apparatus shall have no sharp edges or protrusions which could damage cables or raceways.

Wire splices will not be allowed on an SCADA system signal or control wiring. All splices must be approved by the Engineer. Splices and terminations, as required, shall be incidental to this item and shall be in conformance with Basic Materials and Methods, elsewhere herein.

All wiring shall be tagged with pre-printed, self-sticking, wrap or heat-shrink type wire markers or other markers approved by the Engineer. Hand written wire markers are not acceptable. The tagging shall be applied at each termination and splice. The tagging shall include the full circuit and wire designation. Markers shall be permanent, of a size recommended by the manufacturer for the respective wire size and shall be applied as recommended by the marker manufacturer. All wiring shall be terminated as indicated by the Engineer.

Testing. After installation, the cable shall be tested as approved by the Engineer. Cable failing to pass the test shall be replaced with new cable at no additional cost.

Method of Measurement. The cable shall be measured for payment in feet in place. Measurements shall be made in straight lines between changes in direction and to the centers of equipment. All vertical cable and permissible cable slack shall be measured for payment.

A total of six (6) feet slack shall be allowed for the end of a run terminating at a panel and four (4) feet will similarly be allowed when terminating at a wall-mounted panel. Additional vertical distance for the height of conduit risers, etc., as applicable, will be measured for payment for equipment so mounted.

Basis of Payment. This work shall be paid at the Contract unit price per foot installed ELECTRICAL CABLE, THWN, 1/C from No. 14 to No. 10 of the size and type indicated, which shall be payment in full for the work as described herein.

GE10 ELECTRIC SERVICE DISCONNECT, 2 OR 3 WIRE, COMBINATION

Description. This item shall consist of furnishing and installing for the Lighting and/or Traffic Signal System a service disconnect box, 2 or 3 wire mounted on a wood pole as specified below, or shown on accompanying details drawings and as directed by the Engineer.

Materials. The disconnect box shall be NEMA 4X stainless steel, nominally 12" x 16" x 8" with piano hinged door, steel back panel, fast acting stainless steel enclosure clamps, padlock provisions and door stop kit, Hoffman catalog #A-16H1208SS6LP/A-16P12/A-DSTOPK/C-PMK12, or approved equal.

Circuit Breakers shall be thermal magnetic bolt-on type with a minimum interrupt capacity of 25,000 symmetrical amperes at 240 volts. Breakers shall be lockable in the off position for lockout/tag-out compliance.

Disconnect surge protector shall be suitable for 240/120 volt single phase 60Hz. AC electrical service. Protector shall have a surge energy capability of 2160 joules or better at 8/20 microseconds, rate -40 to 60 degrees C., with LED operating indicators and shall be UL listed per UL 1449. Protector shall be a Cutler Hammer CMOV230L065XST or approved equal.

Conduit, wire, and ground rods to complete the installation of the disconnect box shall included as part of the scope of work.

Bus bars, connectors, and lugs shall be copper, insulated and isolated, and configured to prevent shorted conditions from tightening terminations. Lug and connectors shall be rated for 75 degrees C. Overall bus section shall be configured behind an insulating barrier shield which is removable for access to connections.

Combination ground and neutral bar shall be configured with separate ground and neutral sections and spare terminal as indicated. The heads of grounding screws shall be painted green. The heads of neutral screws shall be painted white.

A plastic laminated layout and circuit diagram shall be affixed to the interior side of the enclosure door. A 2-color engraved plastic nameplate, attached with screws and engraved as indicated, shall be provided for each main breaker. The exact mounting height for the S.E.E.D. shall be field determined and marked by the Engineer.

Electrical service shall be of the voltage indicated. Where 120 volt service is indicated, service drop cable shall be installed accordingly and lighting main breaker and all other service appurtenances shall be included regardless of the service voltage applied to the installation.

The electric service equipment assembly shall be UL labeled, suitable for use as service equipment.

Unistrut channel shall be provided for proper installation of the disconnect, as shown on disconnect mounting detail.

Contractor shall be paid for separately for coordination of work with the Utility company.

Installation. The S.E.E.D. shall be installed as per accompanying disconnect mounting detail. Note detail drawing for installation of stainless steel straps and iron conduit straps. Disconnect shall be installed a minimum of 10 feet above final grade, as shown on electric service detail.

All work beginning to end shall be coordinated with the power utility company. Contractor shall call power utility company.

Method of Measurement. Each Service disconnect Box, 2 or 3 wire, mounted on the wood pole, for the Lighting and/or Traffic Signal Systems, installed complete as per the above specifications and as directed by Engineer, shall count as a unit for payment.

Basis of Payment. This item shall be paid for at the contract unit price each for ELECTRIC SERVICE DISCONNECT, 2 or 3 WIRE, COMBINATION, which shall be payment in full for the material and work described herein.

GE11 ELECTRIC SERVICE DISCONNECT, 2 OR 3 WIRE, SURVEILLANCE/TRAFFIC

Description. This item shall consist of furnishing and installing a Surveillance/Traffic System Service Disconnect Box, 2 or 3 wire, mounted on a wood pole as specified below, shown on accompanying details drawings and as directed by the Engineer.

Materials. The disconnect box shall be NEMA 4X stainless steel, nominally 12" x 16" x 8" with piano hinged door, steel back panel, fast acting stainless steel enclosure clamps, padlock provisions and door stop kit, Hoffman catalog #A-16H1208SS6LP/A-16P12/A-DSTOPK/C-PMK12, or approval equal.

Circuit Breakers shall be thermal magnetic bolt-on type with a minimum interrupt capacity of 10,000 symmetrical amperes at 120 volts. Breakers shall be lockable in the off position for lock out/tag-out compliance.

Disconnect surge protector shall be suitable for 240/120 volt single phase 60Hz. AC electrical service. Protector shall have a surge energy capability of 2160 joules or better at 8/20 microseconds, rated -40 to 60 degrees C., with LED operating indicators and shall be UL listed per UL 1449. Protector shall be a Cutler Hammer CMOV230L65XST or approved equal.

Conduit, wire, and ground rods to complete the installation of the disconnect box shall be paid for via pay items elsewhere herein.

Bus bars, connectors and lugs shall be copper, insulated and isolated, and configured to prevent shorted conditions from tightening terminations. Lug and connectors shall be rated for 75 degrees C. Overall bus section shall be configured behind an insulating barrier shield which is removable for access to connections.

Combination ground and neutral bar shall be configured with separate ground and neutral sections and spare terminals as indicated. The heads of ground screws shall be painted green. The heads of neutral screws shall be painted white.

A plastic laminated layout and circuit diagram shall be affixed to the interior side of the enclosure door.

A 2-color engraved plastic nameplate, attached with screws and engraved as indicated, shall be provided for each main breaker.

The exact mounting height of the S.E.E.D. shall be field determined and marked by the Engineer.

Electrical service shall be of the voltage indicated. Where 120 volt service is indicated, service drop cable shall be installed accordingly and lighting main breaker and all other service appurtenances shall be included regardless of the service voltage applied to the installation. The electric service equipment assembly shall be UL labeled, suitable for use as service equipment. Unistrut channel shall be provided for proper installation of the disconnect, as shown on disconnect mounting detail.

Installation. The S.E.E.D. shall be installed as per accompanying disconnect mounting detail. Note detail drawing for installation of stainless steel straps and iron conduit straps. Disconnect shall be installed a minimum of 10 feet above final grade, as shown on electric service detail. All work beginning to end shall be coordinated with the power utility company. Contractor shall call the power utility company to set up all service calls.

Method of Measurement. Each Service Disconnect Box, 2 or 3 wire, mounted on a wood pole for the Surveillance/Traffic System, installed as per the above specifications and as directed by Engineer, shall count as a unit for payment.

Basis of Payment. This item shall be paid for at the contract unit price each for ELECTRIC SERVICE DISCONNECT, 2 OR 3 WIRE, SURVEILLANCE/TRAFFIC, which shall be payment in full for the material and work described herein.

GE12–GE13 ELECTRIC SERVICE

Description. This work shall consist of the installation of an Electric Service Installation, Type C, or E, which shall meet the requirements of Sections 804, 805, and 1065 of the Standard Specifications for Road and Bridge Construction and District One Traffic Signal Specifications. This item shall consist of all material and labor required to extend, connect or modify the electric services, as indicated or specified, which is over and above the work performed by the utility. The charges by the utility company will be paid separately under vendor letter.

Installation. The Contractor shall notify the electric utility marketing representative a minimum of 15 working days prior to the anticipated date of hook-up. This 15 day advance notification will begin only after the electric utility marketing representative has received service charge payments from the Contractor. The Contractor shall ascertain the work being provided by the electric utility and shall provide all additional material and work required to complete the electric service work in complete compliance with the requirements of the utility. No additional compensation will be allowed for work required for the electric service, even though not explicitly shown on the Drawings or specified herein. Service cable shall be paid for via separate pay item elsewhere herein.

Basis of Payment. This work will be paid for at the contract unit price each for:

GE12 ELECTRIC SERVICE, PEDESTAL OR POLE MOUNTED, COMPLETE
GE13 ELECTRIC SERVICE, RELOCATE

which shall be payment in full for furnishing and installing the service installation complete. Any charges by the utility company to provide electrical services to the service installation will be paid for in accordance with the Standard Specifications for Road and Bridge Construction.

GF01 FIBER OPTIC TRUNK/DISTRIBUTION/LATERAL CABLE SINGLE MODE UP TO 96 SM

Description. This item shall consist of furnishing, installing, and testing a loose tube, single-mode, fiber-optic cable of the type, size, and number of fibers specified, at the locations shown on the plans and shall be in counts of 12, including all splices, splice enclosures, ST or SC connectors, as specified by the Engineer, patch panels and other miscellaneous equipment to make a complete and operating system.

Materials. The single-mode, fiber optic cable shall incorporate a loose, buffer-tube design. The cable shall be qualified to the requirements of RUS 7 CFR1755.900 (PE-90) for a single sheathed, non-armored cable, and shall be new, unused and of current design and manufacture.

The cables shall use dispersion unshifted fibers. The optical and physical characteristics of the un-cabled fibers shall include:

Core Diameter	8.3 μ m (nominal)
Numerical Aperture	0.14
Zero Dispersion Wavelength	1300-1322 nm
Zero Dispersion Slope	0.092 ps/(nm ² *km)(maximum)
Cladding Diameter	125.0 \pm 0.7 μ m
Core-Clad Concentricity	0.05 μ m maximum
Cladding Non-Circularity	1% maximum
Coating Diameter	245 \pm 10 μ m
Coating-Cladding Concentricity	12 μ m maximum
Mode Field Diameter	9.2 μ m \pm 0.4 μ m at 1310 nm
Mode Field Diameter	10.4 μ m \pm 0.5 μ m at 1550 nm
Dispersion	18.0 ps/(nm*km) maximum at 1550 nm

The number of fibers in each cable shall be as specified on the plans.

For cables with more than 12 fibers, the core construction shall consist of individual buffer tubes, each containing 12 fibers. These buffer tubes shall be stranded around a dielectric central strength member using a reverse oscillation process. For cables containing 12 fibers or less, the core shall use a unitube construction with either 6 or 12 fibers in a single tube.

The individual fibers and buffer tubes shall be identifiable by means of a color-coding scheme as specified in TIA/EIA-598.

The maximum attenuation of any cabled fiber shall not exceed 0.4 dB/km at 1310 nm and shall not exceed 0.3 dB/km at 1550 nm.

The cable shall be capable of withstanding a minimum-bending radius of 20 times its' outer diameter during installation and 10 times its' outer diameter during operation without changing the characteristics of the optical fibers.

The cable shall meet all of specified requirements under the following conditions:

Shipping/storage temperature -58^o to F to +158^o F (-50^o C to +70^o C)

Installing temperature: -22^o F to + ^o158 F^o (-30^o C to +70^o C)

Operating temperature -40^o F to + ^o158 F^o (-40^o C to +70^o C)

Relative humidity from 0% to 95%, non-condensing

Fiber Optic Splice

The Contractor shall splice optical fibers from different cable sheaths and protect them with a splice closure at the locations shown on the Plans. Fiber splicing consists of in-line fusion splices for all fibers described in the cable plan at the particular location.

Materials

Splice Closures

Splice Closures shall be designed for use under the most severe conditions such as moisture, vibration, impact, cable stress and flex temperature extremes as demonstrated by successfully passing the factory test procedures and minimum specifications listed below:

Physical Requirement: The closure shall provide ingress for up to four cables in a butt configuration. The closure shall prevent the intrusion of water without the use of encapsulates.

The closure shall be capable of accommodating splice organizer trays that accept mechanical or fusion splices. The splice closure shall have provisions for storing fiber splices in an orderly manner, mountings for splice organizer assemblies, and space for excess or un-spliced fiber. Splice organizers shall be re-entable. The splice case shall be UL rated.

Closure re-entry and subsequent reassembly shall not require specialized tools or equipment. Further, these operations shall not require the use of additional parts.

The splice closure shall have provisions for controlling the bend radius of individual fibers to a minimum of 38 mm (1.5 in.).

Factory Testing

Compression Test: The closure shall not deform more than 10% in its largest cross-sectional dimension when subjected to a uniformly distributed load of 1335 N at temperature of -18° and 38°C (0 and 100° F). The test shall be performed after stabilizing at the required temperature for a minimum of two hours. It shall consist of placing an assembled closure between two flat parallel surfaces with the longest closure dimension parallel to the surfaces. The weight shall be placed on the upper surface for a minimum of 15 minutes. The measurement shall then be taken with weight in place.

Impact Test: The assembled closure shall be capable of withstanding an impact of 28 N-M at temperatures of -18° and 38°C (0 and 100° F). The test shall be performed after stabilizing the closure at the required temperature for a minimum of 2 hours. The test fixture shall consist of 9 kg (20 lb) cylindrical steel impacting head with a 50 mm (2in) spherical radius at the point where it contacts the closure. It shall be dropped from a height of 305 mm (12 in.) The closure shall not exhibit any cracks or fractures to the housing that would preclude it from passing the water immersion test. There shall be no permanent deformation to the original diameter or characteristic vertical dimension by more than 5%.

Cable Gripping and Sealing Testing: The cable gripping and sealing hardware shall not cause an increase in fiber attenuation in excess of 0.05 dB/fiber at 1550 nm when attached to the cables and the closure assembly. The test shall consist of measurements from six fibers, one from each buffer tube or channel, or randomly selected in the case of a single fiber bundle. The measurements shall be taken from the test fibers before and after assembly to determine the effects of the cable gripping and sealing hardware on the optical transmission of the fibers.

Vibration Test: The splice organizers shall securely hold the fiber splices and store the excess fiber. The fiber splice organizers and splice retaining hardware shall be tested per EIA Standard FOTP-II, Test Condition 1. The individual fibers shall not show an increase in attenuation in excess of 0.1 dB/fiber.

Water Immersion Test: The closure shall be capable of preventing a 3 m (10 ft) water head from intruding into the splice compartment for a period of 7 days. Testing of the splice closure is to be accomplished by the placing of the closure into a pressure vessel and filling the vessel with tap water to cover the closure. Apply continuous pressure to the vessel to maintain a hydrostatic head equivalent 3 meters (10 ft.) on the closure and cable. This process shall be continued for 30 days. Remove the closure and open to check for the presence of water. Any intrusion of water in the compartment containing the splices constitutes a failure.

Certification: It is the responsibility of the Contractor to insure that either the manufacturer or an independent testing laboratory has performed all of the above tests, and the appropriate documentation has been submitted to the Department. Manufacturer certification is required for the model(s) of closure supplied. It is not necessary to subject each supplied closure to the actual tests described herein.

Construction Requirements

The closure shall be installed according to the manufacturer's recommended guidelines. For mainline splices, the cables shall be fusion spliced 45 days prior to start of the fiber optic cabling installation. The Contractor shall submit the proposed locations of the mainline splice points for review by the Department.

The Contractor shall prepare the cables and fibers in accordance with the closure and cable manufacturers' installation practices. A copy of these practices shall be provided to the Engineer 21 days prior to splicing operations.

Using a fusion splicer, the Contractor shall optimize the alignment of the fibers and fuse them together. The Contractor shall recoat the fused fibers and install mechanical protection over them.

Upon completing all splicing operations for a cable span, the Contractor shall measure the mean bi-directional loss at each splice using an Optical Time Domain Reflectometer. This loss shall not exceed 0.1 dB.

The Contractor shall measure the end-to-end attenuation of each fiber, from connector to connector, using an optical power meter and source. This loss shall be measured from both direction and shall not exceed 0.5 dB per installed kilometer of single mode cable. Measurements shall be made at both 1300 and 1550 nm for single mode cable. For multimode cable, power meter measurements shall be made at 850 and 1300 nm. The end-to-end attenuation shall not exceed 3.8 dB/installed kilometers at 850nm or 1.88 dB per installed kilometer at 1300 nm for multimode fibers.

As directed by the Engineer, the Contractor (at no additional cost to the Department) shall replace any cable splice not satisfying the required objectives.

The contractor shall secure the Splice Closure to the side of the splice facility using cable support brackets. All cables shall be properly dressed and secured to rails or racks within the manhole. No cables or enclosures will be permitted to be on the floor of the splice facility. Cables that are spliced inside a building will be secured to the equipment racks or walls as appropriate, and indicated on the Plans.

Optical Patch Cords and Pigtails:

Optical patch cords and pigtails shall comply with the following:

- The optical patch cords furnished under this contract shall consist of a section of single fiber, jacketed cable, equipped with optical connectors at both ends.
- The factory installed connector furnished as part of the optical patch cords and pigtails shall meet or exceed the requirements for approved connectors specified herein.
- The fiber portion of each patch cord and pigtail shall be a single, jacketed fiber with optical properties identical to the optical cable furnished under this contract.
- The twelve fiber single-mode fiber optic cable shall be installed as a pigtail with factory installed ST compatible connectors.
- The patch cords shall comply with Telcordia GR-326-CORE

Connectors:

The optical connectors shall comply with the following:

- All connectors will be factory installed ST compatible connectors. Field installed connectors shall not be allowed.
- Maximum attenuation 0.4dB, typical 0.2dB
- No more than 0.2dB increase in attenuation after 1000 insertions

- Attenuation of all connectors will be checked and recorded at the time of installation with an insertion test minimum 5 times checked with an OTDR
- All fibers shall be connectorized at each end
- All fibers shall terminate at a fiber patch panel
- Unused fibers will be protected with a plastic cap to eliminate dust and moisture
- Termination shall be facilitated by splicing factory OEM pigtails on the end of the bare fiber utilizing the fusion splicing method. Pigtails shall be one meter in length.

Installation

Fiber optic cable may be installed in 4-inch surveillance duct existing in the foundation of the barrier wall along the expressway. Cable connecting the barrier wall with remote houses or control cabinets will be pulled through 4-inch GS conduit along with an additional 1-C No. 10 insulated cable for locating purposes. Cable will be installed in the longest continuous lengths supplied by the manufacturer. A suitable cable feeder guide shall be used between the cable reel and the face of the duct and conduit to protect the cable and guide it into the duct off the reel. It shall be carefully inspected for jacket defects. If defects are noticed, the operation shall be stopped immediately and the Engineer notified. Precautions shall be taken during installation to prevent the cable from being "kinked" or "crushed". A pulling eye shall be attached to the cable and used to pull the cable through the duct and conduit system. A pulling swivel shall be used to eliminate twisting of the cable.

As the cable is played off the reel into the cable feeder guide, it shall be sufficiently lubricated with a type of lubricant recommended by the cable manufacturer. Dynamometers or breakaway pulling swing shall be used to ensure that the pulling line tension does not exceed the installation tension value specified by the cable manufacturer. The mechanical stress placed on a cable during installation shall not be such that the cable is twisted or stretched. The pulling of cable shall be hand assisted at each controller cabinet. The cable shall not be crushed, kinked or forced around a sharp corner. If a lubricant is used, it shall be of water-based type and approved by the cable manufacturer. Sufficient slack shall be left at each end of the cable to allow proper cable termination. 40 feet of additional slack cable shall be left in each junction box and 100 feet at each hand hole or as directed by the Engineer. Storage of additional slack cable in junction boxes and hand holes shall be coiled. The slack coils shall be bound at minimum of 3 points around the coil perimeter and supported in their static storage positions. At each junction box and hand hole the cable shall be visibly marked/tagged as "CAUTION-FIBER OPTIC CABLE". Maximum length of cable pulling tensions shall not exceed the cable manufacturer's recommendations.

During cable pulling operations, the Contractor shall ensure that the minimum bending of the cable is maintained during the unreeling and pulling operations. Entry guide chutes shall be used to guide the cable into the hand hole conduit ports. Lubricating compound shall be used to minimize friction. Corner rollers (wheels), if used, shall not have radii less than the minimum installation-bending radius of the cable. A series array of smaller wheels can be used for accomplishing the bend if the cable manufacturers specifically approve the array.

The pulling tension shall be continuously measured and shall not be allowed to exceed the maximum tension specified by the manufacturer of the cable. Fuse links and breaks can be used to ensure that the cable tensile strength is not exceeded. The pulling system shall have an audible alarm that sounds whenever a pre-selected tension level is reached. Tension levels shall be recorded continuously and shall be given to the Engineer upon request.

The fiber optic cable may be installed in conduits already populated with copper telecommunication cable, 50 pair #19 or 100 pair #19. The telecommunications cable shall be removed and new cable installed with the fiber optic cable. Removal of the existing 50 pair or 100 pair #19 cable shall be included in contract unit price for fiber optic cable type, size, and number of conductors as specified.

Splices will be performed using approved fusion splicing equipment. A stainless steel rod, and shrink sleeve will be used to protect each splice. After each splice is performed, the attenuation will be checked and recorded. Splices will then be put into a splice tray, and all splice trays installed inside of an approved splice enclosure.

Installation of the fiber optic cable will require traffic control, which will involve lane closures with restrictive times that the Contractor will be allowed on the freeway. The majority of work involved for the installation will have to be done during nighttime operations or on weekends.

Traffic control will be paid for separately but the Contractor shall reflect the premium labor costs incurred due to restrictive working hours in this contract unit price. The Contractor will not be allowed additional compensation for premium work time incurred under this item.

Pigtails with ST or SC, as specified by the Engineer, compatible connectors shall be spliced and then be terminated in a fiber patch panel or termination panel.

As-built documentation: After the fiber optic cable plant has been installed, ten (10) complete sets of as-built documentation shall be provided. The documentation shall, as a minimum, include the following:

- Complete and accurate as-built diagrams showing the entire fiber optic cable plant including locations of all splices.
- Final copies of all approved test procedures.
- Complete performance data of the cable plant showing the losses at each splice location and each terminal connector.
- Complete parts list including names of vendors.

Testing Requirements: The Contractor shall submit detailed test procedures for approval by the engineer. All fibers shall be tested bi-directionally at both 1310 nm and 1550 nm with both an Optical Time Domain Reflectometer (OTDR) and a power meter and optical source. For testing, intermediate breakout fibers may be concatenated and tested end-to-end. Any discrepancies between the measured results and these specifications will be resolved to the satisfaction of the Engineer.

The Contractor shall provide the date, time and location of any tests required by this specification to the engineer at least 5 days before performing the test. Upon completion of the cable installation, splicing, and termination, the Contractor shall test all fibers for continuity. Events above 0.1 dB and total attenuation of the cable. The test procedure shall be as follows:

A Certified Technician utilizing an Optical Time Domain Reflectometer (OTDR) and Optical Source/Power Meter shall conduct the installation test. The Technician is directed to conduct the test using the standard operating procedures defined by the manufacturer of the test equipment. All fibers installed shall be tested in both directions.

The method of connectivity between the OTDR and the cable shall be a factory patch cord of a length equal to the "dead zone" of the OTDR. Optionally, the Technician can use a factory "fiber box" of 328 ft (100m) minimum with no splices within the box. The tests shall be conducted at 1310 and 1550 nm for all fibers.

At the completion of the test, the Contractor shall provide two copies of documentation of the test results to the Project Engineer. The test documentation shall be submitted as both a bound copy and a CD Rom and shall include the following:

Cable & Fiber Identification:

- Cable ID
- Cable Location-beginning and end point
- Fiber ID, including tube and fiber color
- Operator Name
- Date & Time
- Setup Parameters
- Wavelength
- Pulse width (OTDR)
- Refractory index (OTDR)
- Range (OTDR)
- Scale (OTDR)
- Setup Option

Test Results:

A.) OTDR Test
Total Fiber Trace
Splice Loss/Gain
Events > 0.10 dB
Measured length (Cable Marking)
Total Length

The OTDR test results file format must be Bellcore/Telcordia compliant according to GR-196-CORE issue 2, OTDR Data Standard.

-GR 196, Revision 1.0
-GR196 Revision 1.1
-GR 196, Revision 2.0 (SR-4731)

B.) Optical Source/Power Meter
Total Attenuation
Attenuation (dB/km)

These results shall be provided in tabular form. The following shall be the criteria for the acceptance of the cable:

The test results shall show that the dB/km loss does not exceed +3% of the factory test or 1% of the cable's published production loss. However, no event shall exceed 0.10 dB. If any event is detected above 0.10 dB, the Contractor shall replace or repair the fiber including that event point.

The total loss of the cable (dB) less events shall not exceed the manufacturer's production specifications as follows: 0.5 dB/km at both 1310 and 1550 nm.

If the total loss exceeds these specifications, the Contractor shall replace or repair that cable run at the Contractor's expense, both labor and materials. Elevated attenuation due to exceeding the pulling tension during installation shall require the replacement of the cable run at the Contractor's expense, including labor and materials.

Label the destination of each run or distribution cable onto the cable in each hand hole, vault or cable termination panel.

Slack Storage of Fiber Optic Cables

As part of these items, slack fiber shall be supplied as necessary to allow splicing the fiber optic cables in a controlled environment, such as a splicing van or tent. After splicing has been completed, the slack fiber shall be stored underground in hand holes or in the raised base adapters of ground mounted traffic controller cabinets.

Where identified on the plans, or as directed by the Engineer, additional lengths of fiber shall be stored, as maintenance coils. The aggregate lengths of the maintenance coils and the slack fiber will be used to repair and maintain the fiber optic cable.

Fiber optic cable shall be tagged inside hand holes with yellow tape containing the text "CAUTION – FIBER OPTIC CABLE." In addition, permanent tags, as approved by the engineer, shall be attached to all cable in a hand hole or other break-out environment. These tags shall be stainless steel, nominally 0.75" by 1.72", and permanently embossed. These tags shall be attached with stainless steel straps, and shall identify the cable number, the number of fibers, and the specific fiber count. Tags and straps shall be Panduit or approved equal.

Method of Measurement. The fiber optic cable of the number of fibers specified will be measured for payment as the number of feet of cable, including lengths stored as splicing slack and maintenance coils, actually furnished installed and tested.

Basis of Payment. Fiber Optic Trunk/Distribution/Lateral Cable Single Mode Up To 96 SM of the number of fibers specified shall be paid for at the contract unit price per foot, which cost shall include the cost of furnishing all labor, material, documentation, tools and equipment to install and test the fiber optic cable.

Fiber optic termination panels, splice closures, connectors, splice vaults and hand holes will be supplied and paid for under other contract items.

GF02 FIBER OPTIC LATERAL INSTALLATION SM

Description. Work under this item shall consist of furnishing and installing a fiber optic termination panel, 12 SM fiber optic cable, splice closure, pigtails and patch cords, testing, and documentation to connect a surveillance cabinet or pump station to the trunk or distribution cable.

Materials, Construction Requirements, and Installation:

- Fiber optic cable refer to GF01 requirements
- Fiber optic termination panel refer to GF04 requirements
- Splice Closure, refer to GF01 requirements
- Pigtails, patch cords, testing and documentation, refer to GF01 requirements

Method of Measurement. The fiber optic lateral installation single mode shall be measured for payment at the contract unit price per foot which cost shall include the cost of furnishing all labor, materials, documentation, tools and equipment to install, test, and make the location operational.

Basis of Payment. This work will be paid for at the contract unit price per foot for Fiber Optic Lateral Installation SM, which price shall include furnishing and installing the SM fiber optic cable, splice closure, pigtails and patch cords, testing, and documentation to connect a surveillance cabinet or pump station to the trunk or distribution cable, as directed by the Engineer.

GF03 FIBER OPTIC CABLE, HYBRID 12 MM AND 12 SM

Description. This work shall conform with Section 871 of the Standard Specification for Road and Bridge Construction and District Traffic Signal Specifications as directed by the Signal Engineer.

Method of Measurement. The Fiber Optic Cable, Hybrid 12 MM and 12 SM, shall be measured for payment at the contract unit price each which cost shall include the cost of furnishing all labor, materials, documentation, tools and equipment to install, test, and make the location operational.

Basis of Payment. This work will be paid for at the contract unit price per foot for Fiber Optic Hybrid 62.5/125 multimode (MM) 12 fiber and single mode 12 fiber, which price shall include furnishing and installing the fiber optic cable, necessary slack, cable termination and testing, distribution, enclosures, breakout kits, connectors, lashing wire, messenger wire, splices, pigtail assemblies and all other materials, hardware, and labor necessary to complete the installation as directed by the Signal Engineer. The single mode fiber shall comply with the requirements in GF01. In addition to traffic signal use, this item may also be used at pumping stations and other highway systems.

GF04 FIBER OPTIC TERMINATION PANEL, 12F OR 24F

Description. Work under this item shall consist of furnishing and installing a fiber optic termination panel, type and size as specified on the plans and described herein. This equipment will be used to link field equipment using single-mode fiber optic cable.

Materials. The fiber optic termination panel shall comply with the following requirements:

- The fiber optic termination panel shall be rack mountable or wall mounted
- Rack mounted termination panels shall be installed in 19" racks inside of ITS or 334 Type Cabinets or Pump Houses w/19" racks
- The fiber patch panel shall terminate pigtail fibers as called out on the Plans.
- The fiber optic termination panel shall allow termination of a fiber patch cord to interconnect outside plant fibers to fiber optic communication equipment
- Shall be supplied with optical splice tray and holder
- Wall mounted termination panels shall be installed in Pump Station, Type III, Type IV, or Type V control Cabinets
- Wall-mounted termination panels shall be made out of solid steel construction, shall be powder coated, and feature top or bottom cable entry w/dust resistant grommets.
- Rack-mounted units shall be aluminum material per ATSMB 209, powder coated, and modular design.
- The approved type optical connectors on the end of each pigtail shall screw into a sleeve securely mounted to a patch panel within the controller cabinet. The maximum optical loss across the connection shall not exceed 0.25 dB.
- The fibers with the optical connectors on the pigtail cable shall be routed through and secured in the fiber optic termination panel as directed by and to the satisfaction of the Engineer.
- The bulkheads or single-mode adapter types shall be single-mode ST compatible, ceramic, unless a substitute is approved by the Engineer.

Construction Requirements

The Fiber Optic Termination Panel shall be installed in the Traffic Signal, surveillance cabinets or pump stations as specified on the Plans. The panels shall come with cable strain relief hardware and pull out label for administrative documentation. All work shall be neat and in a workmanlike manner. Particular care shall be taken as to not crush or kink the fiber optic cable. If in the opinion of the engineer the cable has been crushed or kinked, the entire cable span shall be removed and replaced at the Contractor's expense.

The approved type of single-mode connectors on the end of each pigtail must screw into a sleeve securely mounted to the termination panel within the fiber termination panel enclosure. The panel must be provided with pre-connectorized and pre-wired port modules.

Method of Measurement. The fiber optic termination panel, 12 F or 24F, shall be measured for payment at the contract unit price each which cost shall include the cost of furnishing all labor, materials, documentation, tools and equipment to install, test, and make the location operational.

Basis of Payment. Fiber Optic Termination Panel, 12F or 24F will be paid for at the Contract unit price each. This price shall be payment for furnishing and installing the Fiber Optic Termination Panel, 12F or 24F along with any necessary fiber optic patch cords and any other materials, hardware, and labor necessary to complete the installation.

GF05 FIBER OPTIC PATCH PANEL 96 SM

Description. This item shall consist of furnishing and installing a 96 port, ST or SC style, rack or wall mounted, patch panel for single mode fiber. The hardware shall include label holders, numbered ports, front and rear cable management rings. Splicing shall be as described in GF01. Materials shall be as described in GF04.

Method of Measurement. The fiber optic patch panel, 96 SM, shall be measured for payment at the contract unit price each which cost shall include the cost of furnishing all labor, materials, documentation, tools and equipment to install, test, and make the location operational.

Basis of Payment. The work will be paid for a the Contract unit price each for Fiber Optic Patch Panel 96 SM, which shall be payment in full for furnishing, delivering, installing, trimming, and organizing fiber optic cable and testing, supplying optical pigtails and patch cords and all other materials and labor necessary to complete the installation.

GF06 FIBER OPTIC SPLICE CLOSURE

Description. Work under this item shall consist of furnishing and installing a Fiber Optic Splice Closure as described in pay item GF01. Splicing shall be as described in pay item GF01.

Method of Measurement. The fiber optic solice enclosure, shall be measured for payment at the contract unit price each which cost shall include the cost of furnishing all labor, materials, documentation, tools and equipment to install, test, and make the location operational.

Basis of Payment. The work will be paid for at the contract unit price for Fiber Optic Splice Closure, which shall be payment in full for furnishing, delivering, installing, trimming, and organizing the fiber optic splice, testing, and all other materials and labor necessary to complete the installation.

GF07 FIBER OPTIC INNERDUCT, UP TO 1 ½”

Description. The Contractor shall provide a continuous Spiral smooth innerduct installed in the 4” surveillance PVC duct system installed within the median barrier wall. The Polyethylene Plastic Duct shall conform to the following industry standards.

ASTM D3035 - Polyethylene plastic duct (SDR-PR) sized by controlled outside diameter.

ASTM D2247 - Standard specification for polyethylene plastic duct schedules 40 & 80 and sized by controlled outside diameter.

ASTM D1248 - Polyethylene plastics extrusions and molding materials.

The Spiral Ribbed Duct shall be orange in color unless otherwise specified elsewhere in the plans or by the Engineer.

Materials. The high density polyethylene used shall be consistent with PE334420 E/C as described in ASTM D 3350 as per Table 1. The resin properties shall meet or exceed the values set forth below for high density Polyethylene (HDPE).

Table 1 - Resin Properties

<u>ATSM TEST</u>	<u>Description</u>	<u>Valves HDPE</u>
D-638	Tensile Strength at yield PSI	3200min
D638	% Ultimate Elongation Value	400 min

D-746	Brittleness Temp.	-75°C max
D-256	Impact per inch of notch	3.4ft lb/in
D-1238	Melt index, g/10 min. Condition E	.4 max
D-1505	Density g/CM ³	.941-.959
D-1693	Environmental Stress Crack Resistance Condition B, F ₂₀	48 hrs.

Nominal Duct Size	Nominal Inside Diameter	Minimum Wall Thickness	Nominal Outside Diameter	Min Sup. Bend Radius
25mm (1")	28mm (1.101")	2.5mm (.097")	33mm (1.315")	300mm (12")
38mm (1.5")	39mm (1.534")	4.4mm (.173")	48mm (1.900")	432mm (17")

The ribbed duct shall have internally and externally designed longitudinal ribs for reduced pulling frictions and increased lubrication effectiveness.

A pre-lubricated pull tape shall be installed in the innerduct with a minimum tensile strength of 568 Kg or as recommended by manufacturer. The pull tape shall have accurate printed meter markings.

Installation. The Contractor shall install the ribbed duct in the 4" Surveillance PVC duct in the lower portion of the median barrier wall. The Contractor shall insure the ribbed duct is continuous with no breaks from one junction box or cross connect terminal to another and to the surveillance installation. Crushed or deformed ribbed inner duct shall not be used or accepted for use on the job.

Innerduct which passes through junction boxes shall have a termination approximately 2" beyond the terminal end of the 4" PVC duct terminated in the Junction Box.

Innerduct which passes through cabinet foundations shall have an upper termination approximately 2" above the top of the foundation. Ribbed inner duct shall be capped to prevent water and other contaminants from entering during construction operations. The duct shall be swabbed and blown clean of any debris before installation of cable.

Method of Measurement. The unit duct will be measured for payment in feet in place. Measurements will be made in straight lines between changes in direction and to the centers of equipment and boxes access points. 10 feet will be allowed when terminating cable at a controller. 3' of slack will be allowed at light pole, handholes, pull boxes, junction boxes, and similar locations.

All vertical unit duct will be measured for payment. The vertical distance required for breakaway devices, barrier walls, concrete pedestals, etc., and the depth of any burial will be measured. Changes in direction shall assume perfect straight line runs, ignoring actual raceway sweeps.

Basis of Payment. This item will be paid at the contract unit price per lineal feet of FIBER OPTIC INNERDUCT, UP TO 1 ½". The price will be payment in full for furnishing the specified size duct in place and connected at its terminal.

GF08 FIBER OPTIC CABLE, INSTALL ONLY

Description. This item shall consist of retrieving from the owner's storage facility, installing and testing a single mode fiber optic cable of the type, size, and number of fibers specified, at the locations shown in the plans. Splicing, testing, splice closures, documentation and all other miscellaneous equipment to make a complete and operational system shall be as described in GF01, termination and or patch panels, shall be as described in GF04 or GF05, fiber optic splice closure shall be as described in GF06.

Pre-Installation Testing at the Owners' Storage Facility: An optical domain reflectometer (OTDR) shall be used to evaluate the length and quality of cable reels prior to their use on the project. Testing shall be done as described in GF01. Cable which does not meet the requirements set forth in GF01 shall not be installed on the project. It is the Contractor's responsibility to ensure that the fiber is suitable for installation. If cable which does not meet GF01 and is installed, the Contractor shall remove said cable at this/her own expense. Contractor shall make the Engineer aware of the cable which does not meet the Specification. The Engineer will assign an alternate reel or length of cable for installation on the project. The Contractor will be responsible for testing all cable assigned for install under this pay item. The Contractor shall not be entitled to extra compensation for testing multiple cable reels or cable lengths.

Method of Measurement. The fiber optic cable shall be measured for payment at the contract unit price per foot which cost shall include the cost of furnishing all labor, materials, documentation, tools and equipment to install, test, and make the location operational.

Basis of Payment. The installation of fiber optic cable shall be measured in feet of cable actually installed between controllers. This work will be paid for at the contract unit price per foot for fiber optic cable installed only of the type, size, and number of conductors specified, which price shall include retrieving, loading, transporting, installing, and all necessary slack to connect between controllers. Patch panels, inner duct, termination panels, and splice closures shall be paid for separately.

GFC1 FOUNDATION, CONCRETE, TYPE 1

Description. Concrete foundations shall be constructed to support ITS equipment cabinets (Type 1 foundations) at locations as indicated on the Plans. This work shall include installing any necessary hardware (entering conduits, bolts, anchor rods, grounding, etc.) as shown on the Plans. This work shall also include any topsoil, fertilizing, seeding, and mulching of the distributed areas in accordance with Sections 211, 250, and 251 of the Standard Specifications.

Materials. Type 1 concrete foundations shall be according to materials defined in Article 835.02 of Section 836 of the Standard Specifications. All anchor bolts shall be in accordance with Section 1006.09 of the Standard Specifications except that all anchor bolts shall be hot dipped galvanized full length of the anchor bolt including the hooks. Anchor bolts shall provide bolt spacing as shown in the Plans and as required by the cabinet manufacturer.

The Type 1 concrete foundations shall also be fabricated in accordance with Section 1070 of the Standard Specifications. These concrete foundations shall be fabricated from material new and unused in any previous application. The manufacturer shall provide a Certificate of Compliance that the materials are new and meet the specified requirements in accordance with the Standard Specifications and as shown on the Plans.

Construction Requirements. The Engineer will determine the final placement of the Type 1 concrete foundations. Type 1 concrete foundation dimensions shall be in accordance with those dimensions shown in the Plans on the detail sheet "Concrete Foundation Type 1 (Model 334 Cabinet) Detail". The foundation shall be located as required in order to avoid existing and relocated utilities. The top of the foundation shall be finished level. Shimming of the appurtenance to be attached will not be permitted.

Prior to pouring the foundation, the Contractor shall check the Plans for the specific number, size, and direction of conduit entrances required at the given location. All conduits in the foundation shall be installed rigidly in place before concrete is deposited in the form. Bushings shall be provided at the ends

of the conduit. Anchor rods and ground rod shall be set in place before the concrete is deposited by means of a template constructed to space the anchor rods according to the pattern of the bolt holes in the base of the appurtenance to be attached. The appurtenances shall not be erected on the foundation until the bases have cured for at least (7) days. The Concrete shall cure according to Article 1020.13 of the Standard Specifications.

Method of Measurement. Concrete foundations shall be measured for payment, in feet of the concrete foundation in-place installed in accordance with the total length of concrete foundation required for Type 1 foundations as indicated on the Plans and as directed by the Engineer. Extra foundation depth, beyond the directive of the Engineer, will not be measured for payment.

Basis of Payment. Payment will be paid for at the Contract unit price, per foot of FOUNDATION, CONCRETE, TYPE 1, of the diameter and length indicated. The price shall include payment in full for all necessary excavation, backfilling, disposal of unsuitable material form work, furnishing, installing, and testing all materials (entering conduits, bolts, anchor rods, grounding, etc.) within the limits of the foundation. Any topsoil, fertilizing, seeding, and mulching of the distributed areas as well as all associated labor is to be included in this Contract unit price.

GFR1 FOUNDATION REMOVAL

Description. This item shall consist of removing a metal foundation or concrete foundation to a level at least three feet below the adjacent grade, disposing of the foundation outside the right-of-way, backfilling the excavated areas with approved material and reconstructing the surface to match the adjoining area. If the concrete foundation is located in the sidewalk area, the entire sidewalk square or squares where the concrete foundation is located shall be replaced with new sidewalk.

This item shall conform to Section 444 of the Traffic Specifications and as required by the Engineer.

General. Concrete foundations shall be removed to at least 2 ft. below grade with removed material disposed of off the site. The metal foundations shall be removed completely from the ground. The removal shall extend deeper where required to facilitate roadway construction at no additional cost. Underground conduits and cables shall be separated from the foundation at 2-1/2 ft. below grade and shall be abandoned or re-used as indicated.

The space caused by the removal of the foundations shall be back-filled with trench backfill in accordance with Section 208 of the Standard Specifications.

The removal of an existing concrete foundation shall meet the requirements of Section T444 of the Traffic Specifications.

The removal of a concrete foundation three feet or less in depth below grade shall be removed completely and disposed of outside of the right-of-way. A concrete foundation greater than three feet in depth shall have the first three feet below grade removed and disposed of outside of the right-of-way.

The area where the foundations have been removed shall be backfilled and restored to meet the existing grade and terrain.

Basis of Payment. This item shall be paid at the contract unit price each for FOUNDATION REMOVAL, which shall be payment in full for the removal and disposal of a foundation as specified herein.

GGR1 GROUND ROD

Description. This item shall consist of furnishing, installing and connecting ground rods for the grounding of service neutral conductors and for supplementing the equipment grounding system via connection at poles or other equipment throughout the system. Ground wires and connection of ground rods at poles shall be included in this pay item. All materials and work shall be in accordance with Article 250 of the NEC.

Articles 806, and 1087.01 of the Standard Specifications for Road and Bridge Construction, Current version, shall apply to this pay item.

For Traffic Signal Applications, the District 1 Traffic Signal Specifications and the District 1 Standard Traffic Signal Design details shall apply to this item.

Materials. Materials shall be according to the following Articles of Section 1000 - Materials

<u>Item</u>	<u>Articles/Section</u>
(a) Ground Rod	1087.01
(b) Copper Ground Wire	1066.02

Installation. All connections to ground rods, structural steel or fencing shall be made with exothermic welds. Where such connections are made to insulated conductors, the connection shall be wrapped with at least 4 layers of electrical tape extended 152.4 mm (six inches) onto the conductor insulation.

Ground rods shall be driven so that the tops of the rod are 24 inches below finished grade. Where indicated, ground wells shall be included to permit access to the rod connections. Where indicated, ground rods shall be installed through concrete foundations. Where ground conditions, such as rock, preclude the installation of the ground rod, the ground rod may be deleted with the approval of the Engineer.

Where a ground field of electrodes is provided, such as at control cabinets, the exact locations of the rods shall be documented by dimensioned drawings as part of the Record Drawings.

Ground rod connection shall be made by exothermic welds. Ground wire for connection to foundation steel or as otherwise indicated shall be stranded uncoated bare copper in accordance the applicable requirements of ASTM Designation B-3 and ASTM Designation B-8 and shall be included in this item. Unless otherwise indicated, the wire shall not be less than No. 2 AWG. Where connections are made to epoxy coated reinforcing steel, the epoxy coating shall be sufficiently removed to facilitate the exothermic weld.

Method of Measurement. Ground rods shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for a GROUND ROD, which shall be payment in full for furnishing and installing the materials and work specified herein.

GH01–GH04 HANDHOLE

Description. This item shall consist of furnishing and installing a handhole at the location shown on the plans or as diverted by the Engineer.

Material. Materials shall be according to Section 814 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item. The outside cover shall contain a legend "IDOT TSC", or "IDOT TRAFFIC", or "IDOT LIGHTING" as directed by the engineer.

Installation. The installation of a handhole shall meet the requirements of Section T428 of the Traffic Specifications, except as follows: All concrete handholes are to be cast in place against undisturbed earth. No precast concrete handholes will be accepted. All conduits will enter the handhole at a depth of 30 in. except for the conduits between the curb and first handhole for detector loops when the handhole is less than 5 ft. from the detector loop.

Basis of Payment. This work will be paid for at the contract unit price each for:

GH01 HANDHOLE

GH02 HANDHOLE, FIBER OPTIC

GH03 HANDHOLE, HEAVY-DUTY (SURVEILLANCE, TRAFFIC, LIGHTING)

GH04 HANDHOLE, HEAVY-DUTY, DOUBLE

which price shall be payment in full for all necessary excavating, backfilling, disposal of unsuitable materials, and furnishing all materials within the limits of the handhole.

GH05 HANDHOLE, HEAVY DUTY, SPECIAL

Description. This item shall consist of constructing a heavy-duty handhole, special extra large cast in place, complete with heavy duty frame and cover and in accordance with the following requirements and conforming in all respects to the lines, grades, and dimensions shown on the plans or as directed by the Engineer. All handholes shall be installed in accordance with the Standard Specifications for Road and Bridge Section 814 and TSC Typical TY-1TSC-400#15.

Materials. All materials shall conform to Section 1088.05 and 1088.06 of the Standard Specifications for Road and Bridge. All handholes shall be constructed of Class S1 concrete meeting the requirements of the Standard Specifications for Road and Bridge construction Article 1020.

Construction Details. Handhole of the type specified shall be constructed in accordance with the details shown on the plans and conform to the following requirements:

Concrete. Concrete construction shall be done in accordance with the provisions of Concrete for Structures and incidental Construction contained in the Standard Specifications for Road and Bridge Construction, Section 503

Placing Castings. Castings shall be set accurately to the finished elevation so that no subsequent adjustment will be necessary. Castings shall be set flush with a sidewalk or pavement surface. When installed in an earth shoulder away from the pavement edge, the top surface of the casting shall be 25.4 mm (1 inch) above the finished surface of the ground.

Backfilling. Any backfilling necessary under a pavement, shoulder, and sidewalk or within 60 cm (2 feet) of the pavement edge shall be made with sand or stone screenings.

Forming. Forms will be required for the inside face of the handhole wall, and across all trenches leading into the handholes excavation. The ends of conduits leading into the handhole shall fit into a conduit bell which shall fit tightly against the inside form and the concrete shall be carefully placed around it so as to prevent leakage. Handhole walls shall be 10 inches.

French Drain. A French drain conforming to the dimensions shown on the plans shall be constructed in the bottom of the handhole excavation.

Steel Hooks. Each handhole shall be provided with four galvanized steel hooks of appropriate size, one on each wall of the handhole.

Frame and Cover. The outside of the cover shall contain a Type "G" handle for lifting and a legend "IDOT" "TSC" cast in. Frame shall be HD F&C 184 Kg (405 lbs.)

Hinges. Type "T" hinges required only on heavy duty special only.

Cleaning. The handhole shall be thoroughly cleaned of any accumulation of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of final inspection.

Basis of Payment. This work will be paid at the contract unit price each for a HANDHOLE, HEAVY DUTY, SPECIAL, which price shall be payment in full for all necessary excavating, backfilling, disposal of surplus material and form work, frame and cover, and furnishing all materials within the outside limits of the handhole:

GH06 HANDHOLE, REMOVE

Description. This work shall consist of removing the frame and cover of an existing handhole, breaking off the top section of the handhole wall to a minimum depth of 6 inch below the surrounding grade, or as specified, disposing of the concrete debris outside the right-of-way, backfilling the hole with approved material, reconstructing the surface to match the adjoining area, and disposing of the frame and cover as directed by the Engineer. If the handhole is located in the sidewalk area, the entire sidewalk square or squares where the handhole is located shall be replaced with new sidewalk per applicable contract pay items.

Method of Measurement. Remove handhole shall be counted, each.

Basis of Payment. This work will be paid for at the contract unit price each for HANDHOLE, REMOVE which price shall be payment in full for all labor and materials necessary to complete the work as described herein.

GH07 HANDHOLE, REBUILD

Description. This item shall consist of rebuilding and bringing to grade a handhole at a location shown on the plans or as directed by the Engineer.

General. The work shall consist of removing the handhole frame and cover and the wall of the handhole to a depth of 203.2 mm (8 in.) below the finished grade. Upon completion, four (4) holes, 101.6 mm (4 in.) in depth and, 12.7 mm (1/2 in.) in diameter, shall be drilled into remaining concrete; one hole centered on each of the four handhole walls. Four (4) #3 steel dowels, 203.2 mm (8 in.) in length, shall be furnished and shall be installed in the drilled holes with a masonry epoxy.

All concrete debris shall be removed from State right-of-way to a location approved by the Engineer.

The area adjacent to each side of the handhole shall be excavated to allow forming. All steel hooks, handhole frame, cover, and concrete shall be provided to construct a rebuilt handhole according to applicable portions of Section 814 of the Standard Specification for Road and Bridge Construction. (The existing frame and cover shall be replaced if it was damaged during removal or as determined by the Engineer.)

Method of Measurement. Each handhole, which is rebuilt, shall be counted as a unit of payment.

Basis of Payment. This work will be paid for at the contract unit price each for HANDHOLE, REBUILD, which price shall be payment in full for all labor, materials, and equipment necessary to complete the work described above and as indicated on the drawings.

GH08 HANDHOLE, REBUILD EXISTING HANDHOLE TO HEAVY-DUTY

Description. This item shall consist of partial removal of an existing concrete traffic single handhole, reconstruction to the specifications of heavy duty handhole including new frame and cover, at location(s) shown in the plans or as directed by the Engineer.

General. The work shall consist of removing the existing handhole frame and cover and the wall of the handhole to a depth of 381 mm (15 in.) below the finished grade. Upon completion, four (4) holes, 101.6 mm (4 in.) in depth and, 12.7 mm (1/2 in.) in diameter, shall be drilled into the top of the remaining concrete; one hole centered on each of the four handhole walls. Four (4) #3 steel dowels, 203.2 mm (8 in.) in length, shall be furnished and shall be installed in the drilled holes with a masonry epoxy. All concrete debris shall be removed from State right-of-way to a location approved by the Engineer. Any pavement or asphalt surface removal required to install the new concrete shall have straight and neat edges using a method approved by the Engineer. Care shall be taken to protect the existing traffic signal cable. Any cable damage shall be reported immediately and repaired as directed by the Area System Engineer.

All steel hooks, handhole frame, cover, and concrete shall be provided to construct a rebuilt heavy duty handhole according to applicable portions of Section 814 of the Standard Specification for Road and Bridge Construction.

Method of Measurement. Each existing handhole, which is partially removed and reconstructed to a heavy-duty handhole, complete, shall be counted as a unit payment.

Basis of Payment. This work will be paid for at the contract unit price each for HANDHOLE, REBUILD EXISTING HANDHOLE TO HEAVY-DUTY TYPE, which price shall be payment in full for all labor, materials, and equipment necessary to complete the work described above and as indicated on the drawings.

GIG1 INSPECTION, STANDBY GENERATOR

Description. The Contractor shall furnish a factory trained service representative to complete a comprehensive generator inspection, as specified herein, at designated locations.

Locations. This work shall apply to generators at the Pump Stations, Base Stations, Traffic Systems Center (TSC), Fiber Huts, Moveable Bridges (Extra Systems) and two (2) in state stock.

Work Description. The inspection shall consist of, but not limited to the following items, which are described on form GIG1.

- 1) Cooling System
- 2) Fuel System
- 3) Air Induction and Exhaust System
- 4) Lube Oil System
- 5) Starting System
- 6) Engine Monitors and Safety Controls
- 7) Generator Accessories
- 8) Control Panel
- 9) Gas Engine
- 10) Megometer Test
- 11) Load Bank Test

12) Switch Gear Inspection

Method of Measurement. Each inspection that is completed according to form GIG1 and the inspection report submitted and approved by the Engineer shall be counted as unit for payment.

Basis of Payment. This item shall be paid at the contract unit price, each, for INSPECTION, STANDBY GENERATOR, which shall be payment in full for the work described herein.

Generator Inspection Service List

AGREEMENT NO.	CUSTOMER (NAME AND ADDRESS)		ACCOUNT NO.	
GENERATOR SET LOCATION		CONTRACT		TELEPHONE NO.
ENGINE MODEL	SERIAL NO.	SERVICE METER	DATE	
GENERATOR MODEL	SERIAL NO.	VOLTS	KILOWATTS	

SERVICE ITEMS	SATIS-FACTORY	UNSATIS-FACTORY	COMMENTS
---------------	---------------	-----------------	----------

COOLING SYSTEM

- | | | | |
|-----------------------------|--------------------------|--------------------------|--------------------------|
| 1. RADIATOR/HEAT EXCHANGER | | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. COOLANT | <input type="checkbox"/> | <input type="checkbox"/> | |
| 3. HOSES AND CONNECTORS | <input type="checkbox"/> | <input type="checkbox"/> | |
| 4. FAN DRIVE PULLEY AND FAN | <input type="checkbox"/> | <input type="checkbox"/> | |
| 5. FAN BELTS | <input type="checkbox"/> | <input type="checkbox"/> | |
| 6. JACKET WATER HEATER | <input type="checkbox"/> | <input type="checkbox"/> | |
| 7. WATER PUMP | <input type="checkbox"/> | <input type="checkbox"/> | |
| 8. THERMOSTATS | <input type="checkbox"/> | <input type="checkbox"/> | |

FUEL SYSTEM

- | | | | |
|-----------------------------|--------------------------|--------------------------|--------------------------|
| 9. FUEL TANK | <input type="checkbox"/> | <input type="checkbox"/> | |
| 10. WATER TRAP SEPARATOR | <input type="checkbox"/> | <input type="checkbox"/> | |
| 11. FUEL LINES & CONNECTORS | | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. GOVERNOR & CONTROLS | <input type="checkbox"/> | <input type="checkbox"/> | |
| 13. FUEL FILTERS-PRIM./SEC. | <input type="checkbox"/> | <input type="checkbox"/> | |
| 14. FUEL PRESSURE | <input type="checkbox"/> | <input type="checkbox"/> | |

AIR INDUCTION AND EXHAUST SYSTEM

- | | | | | | |
|-----|------------------------------|--------------------------|--------------------------|--|-----------|
| 15. | AIR FILTER | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 16. | AIR FILTER SERVICE INDICATOR | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 17. | AIR INLET SYSTEM | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 18. | TURBOCHARGER | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 19. | EXHAUST MANIFOLD | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 20. | EXHAUST SYSTEM | <input type="checkbox"/> | <input type="checkbox"/> | | |
| 21. | VALVES & VALVE ROTATORS | <input type="checkbox"/> | <input type="checkbox"/> | | RECOMMEND |
- LOAD BANK YES NO

LUBE OIL SYSTEM

22.	OIL	<input type="checkbox"/>	<input type="checkbox"/>		
23.	OIL FILTERS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
24.	OIL PRESSURE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
25.	CRANKCASE BREATHER	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26.	S-O-S	<input type="checkbox"/>	<input type="checkbox"/>		

STARTING SYSTEM

27.	BATTERIES	<input type="checkbox"/>	<input type="checkbox"/>		
28.	BATTERIES-SPECIFIC GRAVITY			<input type="checkbox"/>	<input type="checkbox"/>
29.	BATTERY CHARGER			<input type="checkbox"/>	<input type="checkbox"/>
30.	STARTING MOTOR	<input type="checkbox"/>	<input type="checkbox"/>		
31.	ALTERNATOR	<input type="checkbox"/>	<input type="checkbox"/>		

ENGINE MONITORS AND SAFETY CONTROLS

32.	GAUGES	<input type="checkbox"/>	<input type="checkbox"/>		
33.	SAFETY CONTROLS			<input type="checkbox"/>	<input type="checkbox"/>
34.	REMOTE ANNUN./ALARMS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SERVICE ITEMS

SATIS-FACTORY	UNSATIS-FACTORY
---------------	-----------------

GENERATOR

35.	BEARINGS	<input type="checkbox"/>	<input type="checkbox"/>
36.	SLIP RINGS & BRUSHES	<input type="checkbox"/>	<input type="checkbox"/>
37.	SPACE HEATERS	<input type="checkbox"/>	<input type="checkbox"/>
38.	VIBRATION ISOLATORS	<input type="checkbox"/>	<input type="checkbox"/>

CONTROL PANEL

39.	START CONTROLS-MAN./AUTO	<input type="checkbox"/>	<input type="checkbox"/>
40.	VOLTMETER	<input type="checkbox"/>	<input type="checkbox"/>
41.	AMMETER	<input type="checkbox"/>	<input type="checkbox"/>
42.	FREQUENCY METER	<input type="checkbox"/>	<input type="checkbox"/>
43.	CIRCUIT BREAKER	<input type="checkbox"/>	<input type="checkbox"/>
44.	AUTO TRANSFER SWITCH	<input type="checkbox"/>	<input type="checkbox"/>

GAS ENGINE

45.	GAS LINES & CONNECTORS	<input type="checkbox"/>	<input type="checkbox"/>
46.	CARBURETOR & LINKAGE	<input type="checkbox"/>	<input type="checkbox"/>
47.	MAGNETO/DISTRIBUTOR	<input type="checkbox"/>	<input type="checkbox"/>
48.	IGNITION SYSTEM	<input type="checkbox"/>	<input type="checkbox"/>
49.	SPARK PLUGS	<input type="checkbox"/>	<input type="checkbox"/>

MEGOHMETER TEST

50.	MAIN STATOR	<input type="checkbox"/>	<input type="checkbox"/>
51.	MAIN ROTOR	<input type="checkbox"/>	<input type="checkbox"/>
52.	EXCITER STATOR	<input type="checkbox"/>	<input type="checkbox"/>
53.	EXCITER ROTOR	<input type="checkbox"/>	<input type="checkbox"/>

LOAD BLANK TEST

- 54. REGULATOR MFG. _____
- 55. **EACH OF THE SPECIFIED LOADS SHALL BE TESTED FOR A HALF HOUR.**
- 56. REGULATOR MODEL _____
- 57. HOUR METER START _____ STOP _____
- 58. RACK SETTING _____
- 59. VOLTAGE STABILITY _____

60. PERCENT OF LOAD	0%	25%	50%	75%	100%					
61. KW METER										
62. VOLTMETER L1 TO L2										
63. VOLTMETER L2 TO L3										
64. VOLTMETER L3 TO L										
65. AMMETER L1										
66. AMMETER L2										
67. AMMETER L3										
68. FREQUENCY METER-HZ										
69. ELAPSED TIME METER-HOURS										
70. ENGINE SPEED-RPM										
71. LUBE OIL PRESSURE-PSI										
72. WATER TEMPERATURE (F)										
73. FUEL OIL PRESSURE-PSI										
74. AMBIENT TEMPERATURE (F)										
75. LUBE OIL TEMPERATURE-IN										
76. LUBE OIL TEMPERATURE-OUT										

COMMENTS/RECOMMENDATIONS:

SERVICE TECHNICIAN _____ DATE _____ CUSTOMER REPRESENTATIVE _____ DATE _____

Generator Inspection Service List

Switchgear Inspection Check

Automatically start engine and transfer load.
(Record time it takes to start engine.)
Run engine for ½ hour and take following readings:

1. Amps
2. Volts
3. Oil Pressure
4. Water Temperature
5. Fuel Pressure
6. Frequency
7. Kilowatts
8. R.P.M.
- 9.
- 10.

Automatically stop engine and observe for proper shutdown.

- | | |
|--------------------------------|----------------------|
| 1. Automatic Transfer Switches | Observe, Work, Clean |
| 2. Controls | Observe, Work, Clean |
| 3. Relays | Observe, Work, Clean |
| 4. Timers | Observe, Work, Clean |
| 5. Indicators | Observe, Work, Clean |

Automatic start and Load Transfer

- | | | |
|-------------------------------------|-------|---------|
| 1. Time delay for start signal | _____ | seconds |
| 2. Time engine to start and pick-up | _____ | seconds |
| 3. Total | _____ | seconds |

Automatic Load Retransfer and engine stop signal

- | | | |
|--|-------|---------|
| 1. Time for normal restoration to retransfer | _____ | minutes |
| 2. Unload running time | _____ | minutes |
| 3. Total | _____ | minutes |

Comments: _____

GIT1 INSPECTION, THERMO GRAPHIC

Description. This work shall consist of furnishing equipment, materials and labor for a thermo graphic inspection of electrical systems, including the main service entrance panel, and sub panels at the maintenance yards and other facilities in District 1, as specified by the Engineer. The testing must be performed by a qualified company, with prior experience in such type of testing, and shall be approved by the Engineer. An inspection report, including thermo graphs of the equipment tested and deficiencies noted, shall be furnished.

Method of Measurement. Each inspection that is completed, and report submitted and approved by the Engineer, shall be counted as unit for payment.

Basis of Payment. This work shall be paid at the Contract unit price each, for INSPECTION, THERMO GRAPHIC, of the facility specified, which shall be payment in full for the work as described herein.

GJ01 JUNCTION BOX AND ALL APPURTENANCES, REMOVE

Description. This work shall consist of completely removing an existing junction box and all appurtenances, being careful not to damage those existing conduits which will be re-used in the system. In case of an existing conduit being damaged, a new conduit will be furnished in place. The repair work will not be paid for separately, but will be incidental to this bid item. The junction box and cover will be disposed of as directed by the Engineer and all debris removed beyond the right-of-way.

Method of Measurement. Each junction box, which is removed including all appurtenances, shall be counted as a unit of payment.

Basis of Payment. This work will be paid for at the contract unit price each for JUNCTION BOX AND ALL APPURTENANCES, REMOVE, which price shall be payment in full for all labor and material necessary to complete the work as described above.

GJ02 JUNCTION BOX, INLINE CONNECTORS AND TERMINATION

Description. This item shall consist of furnishing and installing U1B inline connectors and U1Y bridging inline connectors in a junction box type "J" in the expressway median barrier wall as directed, in writing, by the Engineer.

Installation. There is an existing 100C - No. 19 telecommunication cable in the expressway median barrier wall. This cable is "spliced" in junction box type "J" at each surveillance installation and every 1500 ft. in the barrier wall. In the junction box type "J", the Contractor shall remove the existing S66 telephone type terminal blocks and the Plate bracket. The Contractor shall re-terminate the 100C-No. 19 cable with the incoming 6C - No. 19 cable installation using Scotchlok Brand U1B inline, sealed, moisture resistant four wire (1 full pair) connector for solid copper (16-19 AWG) cable. The 100C - No. 19 cable shall be joined bundle for bundle, cable pair for cable pair in the junction box type "J" with the U1B and U1Y connectors. A special crimping tool shall be required for installing the Scotchlok inline connectors. All cabling shall be tied and placed in the "J" box in a neat workmanlike manner. The Contractor shall clean the interior of the "J" box ensuring it is free of debris, water and any corrosion. The Contractor shall ensure that the shielding of both incoming cables are properly bonded together with 10 AWG wire and stainless steel clamps. Contractor shall be responsible for the cost of any and all expressway lane and/or shoulder closures required to complete the work in the median barrier wall. Miscellaneous hardware shall not be paid for separately but considered as incidental to the cost of this item.

Method of Measurement. Electric cable inline connectors, shall be counted, each.

Basis of Payment. This work shall be paid at the contract unit price each, JUNCTION BOX, INLINE CONNECTORS AND TERMINATION, which shall be payment in full for the work as described herein.

GJ03–GJ04 JUNCTION BOX, STAINLESS STEEL

Description. This item shall consist of furnishing and installing a stainless steel junction or pull box of the size indicated in locations shown on the contract drawings and as directed by the Engineer. It is not intended to use for installation of fixture.

Section 813 and 1088 of the Standard Specifications for Road and Bridge Construction, Current version, shall apply to this pay item with the following exceptions: Revise the second sentence of the third paragraph of Article 1088.04 of the Standard Specifications to read: "The gasket shall be extruded directly onto the junction box cover."

Basis of Payment. This work shall be paid for at the contract unit price each for:
GJ03 JUNCTION BOX, STAINLESS STEEL, UP TO 6 INCH DEPTH
GJ04 JUNCTION BOX, STAINLESS STEEL, 8 INCH DEPTH
of the size indicated, which shall be payment in full for the work as described herein.

GMR1 MEDIAN, REMOVE AND REPLACE

Description. This work consist of removing and disposing of the existing concrete or asphalt median and the replacement with new materials of a type similar to that which is existing, in accordance with the applicable portions of Sections 402, 442, 701 and 1001 of the Standard Specifications for Road and Bridge Construction.

Materials. The replaced median surface shall be of similar material and thickness as the median surface removed under this item.

If the median is partially removed, the Contractor shall machine-saw a perpendicular clean joint between that portion of the median to be removed and that which is to remain in place. The depth of removal shall be as directed by the Engineer to accommodate the proposed cross-section of the median replacement material. If the Contractor removes or damages any median or pavement outside the limits of designated remove, he shall remove and replace that portion at his own expense to the satisfaction of the Engineer. Asphalt surface repair shall require saw cutting and removal of the damaged area to provide a straight vertical edge prior to the replacement of surface material.

Installation. Where the existing median to be removed is on top of existing pavement, the Contractor shall remove loose or spilled concrete and clean the pavement surface prior to the placement of the new median or resurfacing. If the median to be removed was doweled to the existing pavement, the Contractor shall remove the dowels by cutting off flush with the pavement surface or removing entirely. Any holes caused by the removal of dowel bars shall be filled with grout.

The limits of the removal and replacement indicated on the drawings are approximate only. Removal and replacement shall take place up to an existing joint in PCC medians, or as directed by the Engineer. If the Engineer directs removal of the median surface other than at an existing joint, the Contractor shall saw cut the median surface at the points of removal.

Method of Measurement. Median removal and replacement shall be measured for payment by square foot in place. Measurements shall be made at the limits of designated removal and depth as directed by the Engineer.

Basis of Payment. This work shall be paid for at the contract unit price per square foot to MEDIAN, REMOVE AND REPLACE, which price includes all labor, material and equipment necessary to remove, dispose of, and replace the existing concrete or asphalt median regardless of its depth, as specified herein.

GPC1 PUMP, CALCIUM CHLORIDE

Description. This item shall consist of removing, furnishing and installing a stainless steel up to 1 HP, centrifugal pump for calcium chloride spray as specified herein.

Materials. The stainless steel pump (Finish Thompsons Inc., model no. DB6V – M226 or better) shall be seal less with magnetic drive, extremely resistant to corrosion and able to handle acids, caustics, chemicals. The motor shall be rated for continuous duty, totally enclosed fan cooled and generates at least 3450 rpm with a closed impeller. It shall be made out of Polyvinylidene Fluoride (PVDF) material rated to -20°F. and shall be UL listed and CSA certified.

Installation. The Contractor shall remove the existing pump, if applicable, for calcium chloride spray at the maintenance yard and replace with the stainless steel pump as specified herein. It shall be wired as per NEC requirement. The cable and conduit if corroded shall be replaced during the installation. It shall be paid separately using non-routine pay items.

Method of Measurement. Stainless steel centrifugal pump of HP as indicated, furnish and install complete with wiring, shall be counted, each.

Basis of Payment. This work shall be paid at the contract unit price to furnish and install STAINLESS STEEL CENTRIFUGAL PUMP, up to 1 HP, which price includes all labor, material and equipment necessary to remove, dispose of, and replace the existing pump, as specified herein.

GPV1 PAVEMENT SEALCOATING

Description. The Contractor shall patch where necessary and seal coat the pavement, within the fenced areas, at each building, hut, and structure once per year in April, per the following specifications. The Engineer's decision shall be final as to the determination of which application and products are utilized.

Preparation. Pavement surface oils shall be removed by washing with an applicable detergent and brushing and/or pressure wash cleaning. All dirt, gravel, leaves, etc., must be removed from the pavement and the pavement must be completely dry, prior to crack sealing and seal coating.

Installation. The Contractor (or Specialty Vendor as approved by the Engineer) shall furnish and install two (2) coats of an appropriate sealcoat coal tar emulsion sealer. The product must meet or exceed both the Air Force and Federal R-P 355e GSA-FSS and the American Society for Testing and Material Specification D-3320-74T specifications. All manufacturers' mix specifications are to be followed as the proper amounts of washed silica sand provide added traction and longevity to the seal finish. A sealer latex enhancer shall be added to increase the longevity and color of the finish. The sealer shall be transported in steel hydraulically agitated tanks to ensure the application of a consistent and uniform mixture at the work site. The seal coating shall be applied at a temperature above 50 degrees F. with a spray device or drag broom assembly, but a uniform distribution is required.

The first seal coat shall be allowed to dry not less than four (4) hours but no more than six (6) hours before the second coat of seal coat is applied. The pavement shall be roped or taped off so no traffic uses the pavement for twenty-four (24) hours after the second coat of seal coat is applied.

The Contractor (or Specialty Vendor as approved by the Engineer) shall furnish and install crack sealant where necessary. Only hot (350 F.) pour rubberized commercial parking lot crack sealant, similar or better than "Flex-A-Fill" shall be used.

Basis of Pavement. This item shall be paid at the contract unit price per square yard for PAVEMENT SEALCOATING, .12 gallons of seal per square yard for the first coat and .06 gallons per square yard for the second coat of seal coating for ASMC pavement.

GRB1 RADIO TOWER BEACON, RELAMP

Description. This item shall consist of furnishing the parts, labor and equipment to restore flashing beacon light and group relamp the remaining lights at that elevation on a District 1 communication microwave tower, within 24 hours of notification, as specified herein by the Engineer.

General. The District 1 has radio towers located in six counties listed in Section 3 that have flashing beacon lights manufactured by Honeywell or an equivalent, for lighting and other obstructions to aerial navigation as specified by the FAA, FCC. The optical system is designed to provide a definite 360 degrees horizontal beam. The beacon must be used with a beacon flasher or tower lighting control installed inside the control room to achieve the proper flash rate.

The beacon light has either a mechanical flashers, immune to AM tower RF frequencies, or an electronic lighting controls to flash several lights on tower, including a photocell for automatic day/ night operation.

Outage. The outage is reported by the night outage patrolman, regular patrolman or called in by District 1 ComCenter to the contractor's dispatch center. The contractor should dispatch immediately and respond to the call to check for the outage. The patrolman shall inspect beacon light to isolate the problem by checking breaker, flasher circuit and associated controls. The defective component shall be reported within one (1) hour to District 1 ComCenter.

The defective lamp and the remaining lamps at that elevation shall be replaced within 24 hours of notification to restore the beacon lighting of the tower. If it needs a new or different flashing control board, the contractor should order the part by overnight delivery or furnish temporary lighting to restore beacon lighting within 24 hours at no extra cost to this pay item.

Method of Measurement. Microwave tower flashing beacon light restored, and group relamp of remaining lights at that elevation, shall be counted, each.

Basis of Payment. This work shall be paid at the contract unit price each for a RADIO TOWER BEACON, RELAMP, which price shall be payment in full for furnishing parts, labor and equipment to restore a beacon light and relamp the remaining lights at that elevation, as specified herein.

GRT1 RADIO TOWER, INSPECTION AND REPORT

Description. This item shall consist of inspection, testing and reporting on District 1's communication radio tower, as specified by the Engineer, by a factory approved Service Company, as described herein.

Materials. The specialty company shall furnish the necessary labor, equipment and tools to inspect and test radio tower, located in six (6) counties (refer to Section 3 for list of locations), as outlined on the "Tower Condition Report". The specialty contractor shall be equipped with all recommended test equipment and provide the accompanying report data.

Work Description. The tower maintenance and inspection procedures shall be as per ANSI/TIA 222-G. Information on this document can be found at www.tiaonline.com/standards/catalog. The copy can be accessed at: www.nationwide.com/codes/codes/tia/Annexes/e_1.htm

Reporting. The contractor shall submit a report of data for all items stated on the form. The report shall also include any pertinent changes made or required to the radio tower.

Method of Measurement. Each inspection of a radio tower location including submittal of its report and approved by the Engineer shall count as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for a RADIO TOWER, INSPECTION AND REPORT, which price shall be payment in full for submitting the report as specified herein.

GSD1 SIDEWALK, REMOVE AND REPLACE

Description. This work consist of the removal and disposal of existing sidewalk and the construction of new sidewalk at locations shown on the plans, in accordance with Sections 424 and 440 of the Standard Specifications for Road and Bridge Construction and as directed by the Engineer.

Method of Measurement. Sidewalk removal and replacement shall be measured for payment in place and the area computed in square feet.

Basis of Payment. This work will be paid for at the contract unit price per square feet for SIDEWALK, REMOVE AND REPLACE, which price includes all labor, material and equipment necessary to remove and dispose of the existing sidewalk and to construct the new sidewalk as specified herein.

GSO1 SODDING

Description. This item shall conform to applicable requirements of Section 252 of the Standard Specifications for Road and Bridge construction. The Contractor shall prepare the ground surface, furnish, transport and install sod including labor and other materials required, as directed by the Engineer.

This item shall conform to Section T252 of the Standard Specifications.

Locations that are to be sodded will be shown on the plans or as directed by the Signal Engineer.

Basis of Payment. This work will be paid for at the contract unit price per square foot of SODDING, which price includes all labor, material and equipment necessary to furnish and place the sod, including sod watering as specified herein. Removal and disposal of the existing sod shall be incidental to the contract unit price.

GTC1 TRAFFIC CONTROL

Description. This item of work shall include furnishing, installing, maintaining, replacing, relocating and removing all traffic control devices used for the purpose of regulating, warning or directing traffic during maintenance or construction activities throughout this contract.

The Contractor shall contact the District One Bureau of Traffic at least 72 hours in advance of beginning work.

Basis of Payment. This work will be paid for at the contract unit price per each for TRAFFIC CONTROL of the closure type indicated, which price shall be payment in full for all labor to install, maintain, replace, relocate and remove all traffic control devices indicated in the plans, specifications, or authorizations.

Delays to the Contractor caused by complying with these requirements will be considered incidental to the item for traffic control and no additional compensation will be allowed for daytime or nighttime closures (or for traffic lanes or ramp closure) on the expressway.

GTR1 TRENCH AND BACKFILL WITH WARNING TAPE

Description. This item shall consist of constructing and backfilling a trench for the accommodation of cables, duct or conduit as described in Section 819 of the Standard Specifications for Road and Bridge Construction, Current version, with the following exception: Delete the third paragraph of Article 819.03(a) except otherwise specifically directed by the Engineer

Method of Measurement.

- (a) Contract Quantities. The requirements for the use of contract quantities shall be according to Article 202.07 (a).
- (b) Measured Quantities. This work will be measured in feet along the centerline of the trench. Trench and backfill will not be measured for payment for conduit which is pushed. Where separate circuit runs are placed in a common trench, only one run will be measured for payment along the centerline of the parallel portion.

Basis of Payment. This work will be paid for at the contract unit price per feet for TRENCH AND BACKFILL WITH WARNING TAPE, of the depth specified. Excavation in rock will be classified and paid for as specified in Section 502.

GU01–GU03 UNIDUCT

Description. This item shall consist of furnishing, installing splicing, connecting, and testing of electric cable in unit duct of sizes specified herein and as shown on the contract drawings. The unit duct shall be an assembly of insulated conductors, which are factory pre-installed in a continuous flexible plastic duct.

The unit duct shall be manufactured and installed in accordance with NEC Article 354.

As stated in NEC Article 354.12, the unit duct shall not be used in exposed locations, and inside buildings except for termination purposes, and in hazardous (classified) locations.

Section 816 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Method of Measurement. The unit duct will be measured for payment in feet in place. Measurements will be made in straight lines between changes in direction and to the centers of equipment and boxes access points. 10 feet will be allowed when terminating cable at a controller. Three feet of slack will be allowed at light pole, handholes, pull boxes, junction boxes, and similar locations.

All vertical unit duct will be measured for payment. The vertical distance required for breakaway devices, barrier walls, concrete pedestals, etc., and the depth of any burial will be measured. Changes in direction shall assume perfect straight line runs, ignoring actual raceway sweeps.

Basis of Payment. This item will be paid at the contract unit price per linear feet for:

GU01 UNIDUCT, WITH EPR INSULATED CABLES, 3/C NO.6 & 1/C NO.8 GREEN, 1”

GU02 UNIDUCT, WITH EPR INSULATED CABLES, 3/C NO.4 & 1/C NO.6 GREEN, 1 ¼”

GU03 UNIDUCT, WITH EPR INSULATED CABLES, 3/C NO.2 & 1/C NO.6 GREEN, 1 ½”

of the size of duct as indicated, which shall be payment in full for all material and work as specified herein.

GU04 UNIDUCT, INSTALL ONLY

Description. This item shall consist of retrieving from Owner's storage facility, loading and installing, splicing, connecting, and testing of electric cable in unit duct of sizes specified herein and as shown on the contract drawings. The unit duct shall be an assembly of insulated conductors, which are factory pre-installed in a continuous flexible plastic duct.

As stated in NEC Article 354.12, the unit duct shall not be used in exposed locations, and inside buildings except for termination purposes, and in hazardous (classified) locations.

Section 816 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Method of Measurement. The unit duct will be measured for payment in feet in place. Measurements will be made in straight lines between changes in direction and to the centers of equipment and boxes access points. 10 feet will be allowed when terminating cable at a controller. Three feet of slack will be allowed at light pole, handholes, pull boxes, junction boxes, and similar locations.

All vertical unit ducts will be measured for payment. The vertical distance required for breakaway devices, barriers wall, concrete pedestals, etc., and the depth of any burial will be measured. Changes in direction shall assume perfect straight line runs, ignoring actual raceway sweeps.

Basis of Payment. This item will be paid at the contract unit price per linear feet for UNIDUCT, INSTALL ONLY, of the size of cut as indicated, which shall be payment in full for installing the item as specified herein.

GV01 EMCMS

Description. This item is to establish a budget account to allocate funds for hardware and software upgrades to obtain continued maintenance support from the software and hardware vendors of the Electrical Maintenance Contract Management System (EMCMS), if necessary, and as approved by the Engineer.

Basis of Payment. The required upgrades are described in Article 4.6.6. The estimated cost, which will be paid under Article 109.05 of the Standard Specifications for Road and Bridge Construction, is \$75,000. This amount shall be used for bidding purposes for pay item GV01.

GV02 OPERATIONAL SUPPORT

Description. This item is to establish a budget account to allocate funds for the payment of EMCMS operational support maintenance, repairs, etc., in the EMCMS, as approved by the Engineer.

Basis of Payment. The Engineer will initiate authorizations accordingly. The total estimated amount of the annual expenses for operational support, which will be paid under Article 109.05 of the Standard Specifications for Road and Bridge Construction, is \$75,000. This amount shall be used for bidding purposes for pay item GV02.

GWR1–GWR2 WELDING RECEPTACLE AND PLUG

Description. Furnish and install welding receptacles and mating plug, 30 Amp or 60 Amp, 3 Poles, 208 Volts, or 2 poles, 240 Volts, complete with interlocked fusible disconnect switch, at the Maintenance Yards, Sign Shops and other Department facilities in District 1, as directed by the Engineer.

Installation. The installation shall include all hardware, junction box and other appurtenances. Removal of the existing receptacle and plug, if necessary, shall be included in this work. Conduit and wire installation shall be paid through other pay items, where needed.

Method of Measurement. Welding Receptacle and mating plug of the amperage and number of poles specified, furnished and installed shall be counted, each.

Basis of Payment. This work shall be paid for at the contract unit price each for WELDING RECEPTACLE AND PLUG, furnish and install, of the rating and number of poles specified by the Engineer, which price shall be payment in full for furnishing, delivering, storing, installing and connecting the receptacle, complete.

GWR1 Welding Receptacle, 30 Amp, Furnish and Install

GWR2 Welding Receptacle, 60 Amp, Furnish and Install

LIGHTING AND SIGN ILLUMINATION SYSTEM NON-ROUTINE PAY ITEMS

LA01 ARM, OR TWIN ARM WITH LUMINAIRE, INSTALL ONLY

Description. This item shall consist of retrieving from Owner's storage facility, loading, and installing, one or two mast arms or twin arm with luminaire(s) and associated hardware on one light pole, as specified herein, at locations designated by the Engineer. Furnished arm(s) and/or luminaire(s) shall be paid separately.

Installation. Installation shall be in accordance with Article 830 of the Standard Specifications for Road and Bridge Construction, Current version.

The mast arm or arms shall be set at right angles to the centerline of the pavement, unless otherwise shown on the plan.

Each arm shall be mounted as indicated and as required for the permanent installation, or temporary lighting on wood pole installation.

This item shall be coordinated with the applicable luminaire (with pole wire and fusing), foundation and anchor bolts, breakaway device (if applicable) which shall be provided under separate pay items, as applicable.

The installation shall be complete with pole wire, fusing and connection to the applicable lighting feeder circuits, all incidentals to this item.

Arms shall not be installed until luminaires are available for installation, which shall be at the same time the pole is installed. This item shall not be paid unless the coordinated assembly of the pole and luminaire is installed, complete.

The manufacturer's recommendations shall be followed during the installation process. The wiring connections shall be made in accordance with the National Electric Code. The Contractor shall energize the system to assure that all the components are working in accordance with their specifications and carrying rated load.

Method of Measurement. Arm, or twin arm, with luminaire(s), on light pole, shall be counted, each, installed.

Basis of Payment. This item shall be paid at the contract unit price each for **ARM, OR TWIN ARM WITH LUMINAIRE, INSTALL ONLY**, which shall be payment in full for installing the item as specified herein.

LB01 BREAKAWAY DEVICE, T-BASE,

Description. This item shall consist of furnishing and installing a breakaway device, transformer base, height specified, for standard, davit, or painted davit light pole, with all associated hardware, as specified herein.

Materials. Materials shall be according to Article 1070.04 of the Standard Specifications for Road and Bridge Construction, Current version, except that certification shall be submitted from the supplier that the device used under the conditions of the particular design meets the 1985 AASHTO breakaway specification.

Breakaway device, transformer base, information submitted for approval shall include any recommendations of the Manufacturer for storage as provided under this contract.

The packaging of the breakaway devices, transformer bases, shall incorporate the provisions recommended by the Manufacturer to accommodate storage.

Revise the second sentence of Article 1070.04(a)(1) of the Standard Specifications to read:

“Certification shall be submitted from the supplier that the device used under the conditions of the particular design meets the 1985 AASHTO breakaway specification.”

The breakaway device, transformer base for a painted davit light pole is normally installed on the Kennedy Expressway at Power Center C & D. The height, top and bottom bolt circle as specified on the plan submitted shall be used as part of this pay item.

Materials for Painted Davit Light Poles Only:

Preparation. Components shall receive a mild etch solvent cleaning.

Primer. Components shall receive two (2) coats of epoxy primer. The primer shall be a polyamide white epoxy primer with a corrosion inhibitor having a solid content, by volume, of not less than 65% (+/3%). Each coat shall be applied in a 3-5 dry MIL thickness.

Finish Coat. Components shall receive one finish coat of aliphatic urethane enamel having a solid content, by volume, of not less than 58% (+/3%). The finish coat shall have a dry MIL thickness of 1.5-2.5 mils. The color of the finish paint shall match that of the existing State owned davit poles which is Benjamin Moore Iron Clad Bronzitone No. 16360. A sample of the proposed paint color shall be submitted for approval to the Engineer.

General. The cleaning and finish work shall be performed indoors, under conditions of controlled temperature, humidity and dust in full conformance with the paint manufacturer's recommendations, and in the presence of an authorized representative of the paint manufacturer.

The paint manufacturer shall certify, in writing that the preparation and finishing of the breakaway transformer base housings has been done properly and in conformance with the Manufacturer's recommendations, and will furnish this certification, together with its standard warranty in triplicate, when the finishing is complete.

A certification from the paint manufacturer, attesting the intent to witness the finishing operation and to provide the above-referenced certification together with a copy of the paint manufacturer's standard warranty shall be included with the pole submittal information.

Installation. Installation shall be in accordance with Section 838 of the Standard Specification for Road and Bridge Construction, Current version.

Manufacturer's recommendations shall be followed during the installation process.

Add the following to Article 838.03(a) of the Standard Specifications:

"All nuts, bolts, washers, and lock washers required for the installation of the transformer base to the pole shall be included as a part of this item."

Method of Measurement. Breakaway device, transformer base of the height, top and bottom bolt circle diameter specified for standard, davit, or painted davit light pole, shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for BREAKAWAY DEVICE, T-BASE, FURNISH AND INSTALL, with all associated hardware, of the bolt circle and height as specified, which shall be payment in full for furnishing the item as specified herein.

LBB1 BREAKER, BRANCH 20A TO 70A

Description. This item shall consist of furnishing and installing a circuit breaker, regular or GFI type, of the amperage and number of poles specified, with all associated hardware, for overload and short circuit protection for conductors and connected apparatus, as specified herein, as shown on the plans, (where applicable), or as directed by the Engineer.

General Requirements. All feeders, branch circuits, and auxiliary and control circuits shall have overcurrent and short circuit protection for conductors and connected apparatus. Unless otherwise indicated, the overcurrent protection shall be by means of circuit breakers.

Material. Unless otherwise indicated, circuit breakers shall be standard UL-listed molded case, thermal-magnetic bolt-on type circuit breakers with trip-free indicating handles.

Unless otherwise indicated, circuit breakers shall have a UL-listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated circuit voltage for which the breaker is applied.

All breakers shall be equipped with auxiliary dry contacts. These contacts may be on the breaker body or off a breaker-attached device. Contacts shall be in a normally open configuration.

Installation. The branch breaker shall be installed into the panel in accordance with the manufacturer's recommendation and in accordance with the National Electrical Code, as indicated on the plan drawing (if applicable) or as directed by the Engineer. All the connections shall be tight to prevent any arcing.

The branch breaker shall be labeled to indicate circuits. The auxiliary contact switch, if used, shall be wired as directed by the Engineer.

Method of Measurement. Breaker, branch, shall be counted, each, as a unit of payment, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for a BREAKER, BRANCH, 20A to 70A, of the amperage and number of poles specified, which shall be payment in full to provide an installation, complete and operating.

LBB2-LBB3 BREAKER, MAIN

Description. This item shall consist of removing (if upgrading), furnishing, and installing a main breaker, amperage and number poles as per plan or specified for overload and short circuit protection for conductors and connected apparatus as specified herein. All feeders, branch circuits, auxiliary, and control circuits shall have overcurrent and short circuit protection for conductors and connected apparatus. Unless otherwise indicated, the overcurrent protection shall be by means of circuit breakers.

Material. Unless otherwise indicated, main breakers shall be standard UL-listed molded case, for reverse feed applications, thermal-magnetic bolt-on type circuit breakers with trip-free indicating handles. Unless otherwise indicated, main breakers shall have a UL-489 interrupting rating of not less than 35,000 rms symmetrical amperes at 480 volts and 65,000 rms symmetrical amperes at 240 Volts. Multi-pole main breakers larger than 100 amps size shall have instantaneous adjustable magnetic trip settings. The main breaker shall be equipped with auxiliary contacts

Removal. Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition. No removal work shall be permitted without approval from the Engineer. Any damage resulting from the removal and/or transportation of the main breaker shall be repaired, to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Installation. Unless otherwise indicated, power wiring shall be of the size specified for the corresponding service conductors and shall be rated RHH/RHW, 600 volts and tagged with the self-sticking cable markers. The labor and material to make the appropriate terminal connections in the cabinet as directed by the Engineer shall be incidental to this pay item.

The manufacturer's recommendations shall be followed during the installation process. The wiring connections shall be made in accordance with the National Electric Code. The Contractor shall energize the system to assure that all the components are working in accordance with their specifications and carrying rated load. The main lugs shall be secured in line with Underwriters' Laboratories standards to prevent lugs from turning or loosening when incoming cables are installed. The current carrying parts shall be secured in place to prevent flexing and loosening or damage during and after installation. At the branch circuit, breakers and associated wiring shall be labeled to identify the location of equipment and/or loads used. The auxiliary contact switch, if used, shall be wired as directed by the Engineer.

Method of Measurement. Main breaker shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each of MAIN BREAKER, of the type and size indicated below, which shall be payment in full for furnishing and installing a main breaker as shown on the plan and as specified herein, with all related hardware necessary to provide a complete installation.

LBB2 BREAKER, MAIN 60A TO 100A

LBB3 BREAKER, MAIN 125A TO 175A

LBT1 BUCK-BOOST TRANSFORMER

Description. This item shall consist of furnishing and installing a single-phase buck-boost transformer of KVA specified complete with all the appurtenances and all required hardware, connecting cables and terminal connections as specified herein and as directed by the Engineer. The unit(s) may be installed on a sign structure or on a bridge structure or in a lighting control cabinet or at a location specified by the Engineer. Units are single-phase but can be installed as a three-phase bank.

General Requirements. The buck-boost transformer is used as an auto-transformer for slight upward (boost) or downward (buck) adjustments in voltage. Buck-boost transformers are encapsulated designs with totally enclosed, non-ventilated enclosures. In an auto-transformer, the primary and secondary are electrically and mechanically connected together. Auto-transformers can be used only where local electrical codes permit and isolation of the two circuits are not required.

Material. The transformers shall be UL listed and/or CSA approved to meet or exceed all applicable NEMA, ANSI, UL, OSHA, and CSA requirements. The enclosure shall be NEMA 3R suitable for indoor/outdoor applications, coated with a UL approved ASA-61 gray finish. The transformer shall be encapsulated with electrical grade epoxy and silica sand to completely seal the core and coil from moisture and contaminants. It shall be tested in accordance with the latest issue of UL 506 and CSA C22.2 No. 47. The conductor material shall be copper, and the insulation shall be rated for class 180 degrees Celsius.

Installation. Unless otherwise indicated, power wiring shall be of the size specified for the corresponding service conductors and shall be rated RHH/RHW, 600 volts and tagged with the self-sticking cable markers. The labor and material to make the appropriate terminal connections in a junction box as directed by the engineer shall be incidental to this pay item.

The manufacturer's recommendations shall be followed in the installation. The wiring connections shall be made in accordance with the National Electric Code. The Contractor should energize the system to assure that all the components are working in accordance with their specifications and carrying rated load. The Contractor shall provide the electrical data as specified and directed by the Engineer.

Method of Measurement. Buck-Boost transformer shall be counted, each, as specified, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for a single-phase BUCK-BOOST TRANSFORMER, of the KVA specified, which shall be payment in full for furnishing all labor, materials and equipment to install the transformer(s) and related appurtenances necessary to provide a complete and operational installation.

LC01 CONTROLLER, DUPLEX CONSOLE, WITH RADIO

Description. This item shall consist of furnishing and installing a roadway lighting controller, duplex console type with radio control and associated wiring for control of highway lighting and delivering to storage a lighting controller, as specified herein. All work shall be according to the Article 7 – Lighting, navigation and sign illumination system in Volume 1.

Method of Measurement. Each lighting controller, duplex console type, with radio control, inspected and approved by the Engineer, shall be counted, each, as a unit for payment, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for CONTROLLER, DUPLEX CONSOLE TYPE, WITH RADIO, which shall be payment in full for furnishing and installing the lighting controller, complete, as specified herein.

LC02 CONTROLLER, DUPLEX CONSOLE, WITHOUT RADIO

Description. This item shall consist of furnishing and installing a roadway lighting controller, duplex console type, without radio control, including associated wiring, for the control of highway lighting, as specified herein. All work shall be according to the Article 7 – Lighting, navigation and sign illumination system in Section 1.

Method of Measurement. Lighting controller, duplex console type, without radio, shall be counted, each, as a unit for payment, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for CONTROLLER, DUPLEX CONSOLE, WITHOUT RADIO CONTROL, which shall be payment in full for furnishing and installing the lighting controller, complete, as specified herein.

LC03 CONTROLLER, LIGHTING, INSTALL ONLY

Description. This item shall consist of retrieving from Owner's storage facility, loading, transporting and installing a lighting controller complete with all the appurtenances and all required hardware as specified herein, at locations designated by the Engineer. The lighting controller and foundation shall be paid separately. The Contractor shall transport, handle and store (as applicable) the lighting controller in complete conformance with the manufacturer's recommendations and as directed by the Engineer.

Installation. The lighting controller shall be installed as shown on the contract plans or as directed by the Engineer. The installation work shall be in accordance with Section 825 of the Standard Specifications for Road and Bridge Construction, current version, except the foundation will be paid separately.

Manufacturer's recommendations shall be followed during the installation process. The wiring connections shall be made as shown on the drawings and in accordance with the National Electrical Code. The Contractor shall energize the lighting controller to assure that all the components are working in accordance with their specifications and carrying rated load.

Method of Measurement. Lighting controller shall be counted of the type specified, each, installed.

Basis of Payment. This item will be paid at the contract unit price each for CONTROLLER, LIGHTING, INSTALL ONLY, of the type specified, which shall be payment in full for the complete installation as specified herein.

LC04 CONTROLLER, LIGHTING, REMOVE AND SALVAGE

Description. This item shall consist of disconnecting, completely removing, transporting to the Owner's storage facility, unloading as salvage and stacking or boxing if necessary, and all types of existing lighting controller or designated components thereof, as specified herein. Proper documentation of Owner's salvage is required in this pay item.

General. Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition.

No removal work shall be permitted without approval from the Engineer. Direct buried underground electric cables need not be removed. Cables which are abandoned shall be cut one foot below ground level. Cables in unit duct shall be removed from the duct, or as designated by the Engineer. Duct shall be abandoned and cut one foot below ground level.

Except as otherwise indicated, the cabinet, control equipment, and all associated hardware and appurtenances shall remain the property of the Owner and shall be delivered to the Owner or the Owner's electrical maintenance facility.

Unless otherwise directed by the Engineer, the concrete foundation shall be removed to at least two feet below grade and disposed of off the job site. The underground conduits and cables shall be separated from the foundation at 2.5 feet below grade and abandoned. The space caused by the removal shall be backfilled with trench backfill in accordance with Section 815 of the Standard Specifications.

Any damage resulting from the removal and/or transportation of the controller, control equipment, and associated hardware, shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer. The Engineer shall be the sole judge to determine the extent of damage.

Method of Measurement. Each lighting controller, and all associated control equipment, which is removed, delivered to storage, unloaded, inspected, stacked and documented properly, shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the contract unit price each for existing CONTROLLER, LIGHTING, REMOVE AND SALVAGE, which shall be payment in full for the work specified herein.

LC05 CONTROLLER, SINGLE DOOR, CONSOLE, WITHOUT RADIO

Description. This item shall consist of furnishing and installing a roadway lighting controller, single door, console type, without radio control, including associated wiring, for the control of roadway lighting, as specified herein. All work shall be according to the Article 7 – Lighting, Navigation and Sign Illumination System in Volume 1.

Method of Measurement. Lighting controller, single door enclosure, console type, without radio control, shall be counted, each, as a unit for payment, furnished and installed.

Basis of Payment. This item will be paid at the contract unit price each for CONTROLLER, SINGLE DOOR, CONSOLE, WITHOUT RADIO, which shall be payment in full for furnishing and installing the controller, as specified herein.

LC06 CONTROLLER, COMBINATION LIGHTING

Description. This item shall consist of furnishing and installing a roadway lighting controller, mounted on traffic signal cabinet for combination lighting and associated wiring as specified herein.

Material. The lighting controller shall be as follows:

Enclosure: The completed controller shall be an industrial control panel NEMA 4X with an overall dimension of 20" X 16" X 8", and shall comply with UL 508 standards. The enclosure shall be made out of molded fiberglass polyester with gray finish and enhanced with UV inhibitors to protect against outdoor weathering. The door fasteners shall be stainless with butterfly type twist lock including a provision for padlocking.

Electrical components; Refer to the figure L-21 for cabinet wiring diagram and list of components. Article 1068 (d), and (e) of the Standard Specification for Road and Bridge Construction, current revision shall apply to this pay item.

Installation. The lighting controller installation shall be according to the details, location, and orientation shown on the plan.

Method of Measurement. Each lighting controller, combination type, inspected and approved by the Engineer, shall be counted, each, as a unit for payment, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for CONTROLLER, COMBINATION TYPE, which shall be payment in full for furnishing and installing the lighting controller, complete, as specified herein.

LCL1 CLOCK, DIGITAL ASTRONOMICAL

Description. This item shall consist of removing, furnishing and installing, a solid state digital astronomical time clock with necessary contactors for control of lighting, as specified herein. All boxes required for proper storage shall be included in this item.

Materials. Article 1068.01 (e) (1) of the Standard Specifications for Road and Bridge Construction, Current version, shall apply to this pay item. The timing of the unit shall be synchronous with the 60-Hertz power line frequency.

Installation. The Contractor shall transport and handle the digital time switch in complete conformance with the manufacturer's recommendations. Manufacturer's recommendations shall be followed during the installation process.

The contact rating of the time switch shall be sufficient to energize the contactor. If an external relay is needed to energize the contactor, then the relay, wiring, and installation shall be incidental to this pay item. The digital astronomical time switch shall be installed inside the lighting controller or as indicated on the plan drawing and wired accordingly. It shall be programmed to set time of the day and set other functions to operate the lighting.

Method of Measurement. Digital astronomical clock, furnished, removed and installed shall be counted each for payment.

Basis of Payment. This item shall be paid at the contract unit price each for a CLOCK, DIGITAL ASTRONOMICAL, which shall be payment in full for furnishing and installing as specified herein.

LCN1–LCN2 CONTACTOR

Description. This item shall consist of furnishing and installing a lighting contactor, with number of poles, with or without an auxiliary switch contact, as per plan and wiring for control of lighting as specified herein.

Material. Article 1068.01(e) (4) of the Standard Specifications for Road and Bridge Construction, Current version, shall apply to this pay item with the following exception: Revise the first sentence of Article 1068.01(e)(4) of the Standard Specifications to read:

"Contactors shall be electrically operated, mechanically held as specified, with the number of poles required for the service and with operating coil voltage as indicated."

Ampere rating of contactors shall be not less than that required for the duty shown and shall otherwise be rated as indicated.

Contactor shall come equipped with normally open, dry, auxiliary contacts. A device attached to the CAM of the contactor may provide these contacts. Unless otherwise indicated, the contactor-operating coil shall operate at 240 volts, single phase and contactors furnished under this specification shall be with continuous rating as specified per pole at 480 Volts AC.

Installation. The lighting contactor shall be carefully installed in accordance with the manufacturer's recommendation and in accordance with the design requirements represented on the plans. The wire sizes listed on the manufacturer's catalog shall be utilized and it must meet the National Electrical Code. The proper electrical clearance between the live metal parts and grounded metal shall be maintained. The proper size wire shall be used for control circuit connections designated "L", "O" and "C" supplied with clamp type terminals. The auxiliary contact, if used, shall be wired as directed by the Engineer.

Method of Measurement. Lighting contactor shall be counted, each, as a unit of payment, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for LIGHTING CONTACTOR, of the amperage indicated below, which shall be payment in full for furnishing and installing the lighting contactor, complete, as specified herein.

LCN1 CONTACTOR, 125A TO 225A

LCN2 CONTACTOR, 30A TO 100A

LD01–LD04 DECAL SET, LIGHTING UNIT

Description. This item shall consist of furnishing and installing, a lighting unit identification decal set for a pole or underpass, a lighting unit identification decal set including bracket for underpass mounting, a lighting unit identification decal set for a light tower with painted surface only, or a light tower which has a camera mounted on the luminaire ring, at installations and at heights as designated by the Engineer. This work shall also include the removal of all existing decals as necessary to complete the installation in a neat and aesthetically pleasing manner.

Materials. Article 1069.06 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Installation. Underpass luminaires, including appurtenances, identification brackets and conduit, and associated anchors, shall not be attached and/or drilled into precast, prestressed concrete beams. However, existing anchors, which have been installed improperly, shall be left in place. (Removal of such would cause more damage to the beam, than leaving the anchors in place).

Articles 830.03, 835.02 and 844.03 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Method of Measurement. Lighting unit identification decal set shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing an IDENTIFICATION (ID) DECAL SET, of the size per maximum character mounting as described below, which shall be payment in full for the work as specified herein.

- LD01 DECAL SET, LIGHTING UNIT, POLE, 4 INCH, MAX 10 CHARACTERS
- LD02 DECAL SET, LIGHTING UNIT, TOWER, 8 INCH, MAX 10 CHARACTERS
- LD03 DECAL SET, LIGHTING UNIT, TUNNEL OR UNDERPASS WITH BRACKET, 4 INCH, MAX 10 CHARACTERS
- LD04 DECAL SET, LIGHTING UNIT, TOWER WITH CAMERA, 4 INCH, MAX 10 CHARACTERS

LDS1 DISCONNECT SWITCH

Description. This item shall consist of removing, furnishing and installing a disconnect switch, as directed by the Engineer.

Materials. The disconnect switch shall be 600 volt, 2-pole or 3-pole, up to 60-ampere, fusible, with solid neutral in a NEMA 4X stainless steel enclosure, complete with 20 ampere, 600 volt, dual element, time delay 4L, Class R fuses, having a UL listed interrupting rating of not less than 200,000 rms symmetrical amperes at rated voltage and suitable for use as service equipment for building.

Fuse holders shall be standard type fuse holders complete with fuses. All electrical materials shall conform to Article 1065, latest version of Standard Specification for Road and Bridge Construction. Raceways shall be as detailed on the plans. Wire from the base fuse to the disconnect switch and to the sign luminaires shall be as specified for pole wire.

The fuse at the base of the sign structure shall be 30 ampere with a solid neutral assembly.

Removal. Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition.

No removal work shall be permitted without approval from the Engineer.

Any damage resulting from the removal and/or transportation of the controller, control equipment, and associated hardware, shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Installation. The Contractor shall provide all equipment, transportation and labor necessary to install the equipment as specified. New wiring, conduit and luminaires will be paid by separate pay items specified elsewhere herein.

Manufacturer's recommendations shall be followed during the installation process. The wiring connections shall be made as shown on the drawings and in accordance with the National Electrical Code. The Contractor shall energize the disconnect switch to assure that all the components are working in accordance with their specifications and carrying rated load.

Method of Measurement. Removing, furnishing and installing each Disconnect Switch for a sign unit or State owned facilities as specified above, and approved by the Engineer, shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for removing, furnishing and installing a DISCONNECT SWITCH, which shall be payment in full for the work specified herein.

LE01 ELECTRICAL OUTLET, GFCI TYPE

Description. This item shall consist of furnishing and installing a ground fault interrupter, (GFCI) with an indicator visual or audible, and all required hardware as specified herein. All required hardware is incidental to this pay item, however, the circuit breaker for the GFI outlet, shall be paid under a separate pay item.

Materials. The box and cover shall be made out of heavy-duty die cast aluminum, 0.094 in. thick for damp or wet locations and shall be in compliance with the NEC Article 406-8(B). The box shall be UL listed and comply with Federal Spec. W-C586C. The ground fault interrupter shall be of specification grade, NEMA 3 configuration and comply with applicable UL, CSA and Federal Standards. The cover shall be UL listed for wet locations and comply with UL Standard 514.

The GFCI shall have a light indicator when it is energized. The GFCI receptacle shall have an end of life provision when it is incapable of passing its internal test function (can no longer provide ground fault protection), it will either render itself incapable of delivering power, or indicate by visual or audible means that the device must be replaced. The GFCI shall be capable of reverse line-load mis-wire so that it will deny power to the receptacle face if it is mis-wired.

Transportation. The Contractor shall transport, handle and store (as applicable) the GFI outlets in complete conformance with the manufacturer's recommendations.

Installation. Each GFCI shall be mounted as indicated on the contract drawing or as directed by the Engineer. The installation shall be complete with necessary cable (paid under separate pay item) and connected to the applicable feeder circuit. The circuit breaker shall be labeled for the appropriate GFI.

Method of Measurement. A ground fault interrupter (GFI), shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing an ELECTRICAL OUTLET, GFCI TYPE which shall be payment in full for the item specified herein.

LE02 CONVENIENCE RECEPTACLE, 20 AMP

Description. Furnish and install convenience receptacles, 20A, Voltage as specified by the Engineer for Maintenance yards, Sign Shops and other Department facilities in District 1, as directed by the Engineer. Installation shall include all hardware, junction box, and other appurtenances. Removal of the existing receptacle, if necessary, shall be included in this work. Conduit and wire installation shall be paid through other pay items, where needed.

Method of Measurement. Electrical convenience receptacle, 20 Amp, shall be counted, each, furnished and installed.

Basis of Payment. This work shall be paid at the contract unit price each for CONVENIENCE RECEPTACLE, 20 Amp, which price shall be payment in full for furnishing, delivering storing, installing and connecting the receptacle complete.

LF01 FOUNDATION, LIGHT POLE

Description. This item shall consist of the construction of a steel reinforced concrete light pole foundation, up to 30" diameter, of the diameter specified, complete with raceways, as specified herein. The foundation depth shall be as indicated in the Foundation Depth Table on the plans (where applicable) or as directed by the Engineer.

The foundation shall include soil testing, excavation, reinforcement, concrete, anchor bolts, nuts, washers and raceways as well as clean-up and restoration of the location when such work is not provided under other paid items.

Sections 836, 1020, 1070 and also Articles 1006.10, 1088.01, of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item with the following:

Anchor bolts for light poles shall be heat-treated. Therefore, an exothermic ground wire connection shall not be made to the anchor bolt. Instead, a mechanical connection of the ground wire shall be made to the anchor bolt. However, the cable connections to the ground rod and the rebar cage shall be exothermic.

Method of Measurement. Light pole foundation of the diameter and depth specified shall be counted, per linear foot, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price for soil testing, furnishing and installing per linear foot for FOUNDATION, LIGHT POLE of the diameter specified, of the depth indicated, which shall be payment in full for the work as specified herein.

LF02 FOUNDATION, LIGHT POLE, METAL

Description. This item shall consist of furnishing and installing a metal foundation of the diameter specified for a light pole, consisting of a helix type screw base, base plate, pilot point and hardware for supporting a light pole as specified herein. Excavation in rock will be paid as specified in Section 502.12 for Excavation for Structures.

Materials. Article 1070.01 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Installation. Installation shall conform to Article 836.03 (b) of the Standard Specifications for Road and Bridge Construction, current version.

Method of Measurement. Light pole foundation of the diameter specified shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for a FOUNDATION, LIGHT POLE, METAL, of the diameter, specified, which shall include all excavation or drilling except excavation in rock, backfilling, disposal of unsuitable material, form work and furnishing all materials within the limits of the foundation.

LF03 FOUNDATION, LIGHT TOWER, UP TO 54 INCH DIAMETER

Description. This item shall consist of the construction of a steel reinforced concrete light tower foundation, up to 54 inch in diameter, complete with raceways, as specified herein. The foundation depth shall be as indicated in the Foundation Depth table on the plans (where applicable) or as directed by the Engineer.

The foundation shall include soil testing, excavation, reinforcement, concrete, anchor bolts, nuts, washers and raceways as well as clean-up and restoration of the location.

Excavation in rock shall be paid according to Section 502.05 and 502.12 of the Standard Specifications for Road and Bridge construction, current version.

Sections 837 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item with the following.

Method of Measurement. Light tower foundation, up to 54" in diameter, shall be counted, per linear foot depth, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price for furnishing and installing per linear foot for FOUNDATION, LIGHT TOWER, UP TO 54 INCH DIAMETER, of the depth indicated which shall be payment in full for the work as specified herein.

LF04 FOUNDATION, LIGHTING CONTROLLER

Description. This item shall consist of furnishing and installing a concrete foundation for a lighting controller cabinet as specified herein, shown on the plans, or as directed by the Engineer. The material and labor for the ground field shall be paid under a separate pay item.

Materials. Concrete shall be Class SI complying with Section 1020 of the Standard Specifications, current version.

The anchor bolts shall comply with ASTM A576. The entire length of the anchor bolts shall be hot dipped galvanized steel according to ASTM 153. The nuts, lock washers, and flat washers shall be galvanized also.

The foundation shall include a 1 inch diameter galvanized steel raceway for the ground field connection.

Conduit raceways shall be heavy wall rigid polyvinylchloride (PVC) conduit, (Schedule 40) UL listed and in conformance with NEMA TC2 and Federal Specifications WC-1094A. Raceways shall be of the number and size as indicated on the drawing.

The foundation shall include a ground field of (3) 5/8 inch X 10 ft. copper-clad steel ground rods connected via 2/0 bare copper wire. All connections shall be made with exothermic welds. The ground wire shall be stranded, uncoated, bare copper in accordance with the applicable requirements of ASTM Designation B-3 and B-8.

Installation. Installation shall comply with Section 825 of the Standard Specifications for Road and Bridge Construction, current version.

The foundation shall have a depth and size as shown on the contract drawing. The top of the foundation shall extend twelve inches from the surrounding finished grade and the edges shall be beveled. A poured, 4-inch thick concrete pad, 4 feet wide X 4 feet shall be provided in front of the cabinet with an expansion joint. Exact concrete pad dimensions and location shall be confirmed with the Engineer, prior to installation. The ground field shall be a 10 feet triangle as shown on the drawing. Each ground rod shall be within a ground well as detailed on the drawing. No ground well shall be placed in the concrete pad in front of the

controller. The cabinet shall be caulked at the base. All the conduit entrances into the cabinet shall be sealed with a pliable waterproof material.

Method of Measurement. Lighting Controller, console type, foundation shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each, for furnishing and installing FOUNDATION, LIGHTING CONTROLLER, which shall be payment in full for the work as specified herein.

LF05 FOUNDATION, MODIFICATION FOR CONCRETE OR METAL

Description. This item shall consist of furnishing the necessary labor, equipment, and materials to modify and adjust an existing light pole foundation, concrete or metal, to an elevation as specified herein and as indicated by the Engineer, and the re-installation of the existing light pole upon the modified light pole foundation.

General. This work shall include removing an existing light pole, opening the unit duct, exposing the cable, and pulling the cable out of the foundation in order to adjust foundation, concrete or metal, to an acceptable elevation. The existing unit duct shall be opened in a manner as to minimize bends and not damage the existing electric feeder cable into the adjusted foundation. This work shall meet the requirements of Section 844 of the Standard Specifications for Road and Bridge Construction, current version.

The existing raceway wiring slots are 180 degrees apart, thus in the process of lowering the existing metal foundation, rotation should be in multiples of 180 degrees to assure existing raceway cables can be reused. The foundation shall be lowered with its axis plumb so that the light pole may be reinstalled without the use of shims, grout or other leveling devices.

The foundation shall be adjusted vertically and the base plate shall be level. Extreme care shall be used to achieve the proper final elevation of the top of the foundation with respect to the existing grade. The base plate shall be level and not more than 1" above the highest point of adjacent existing grade.

This work shall include installing a unit duct sleeve, which is the next larger diameter unit duct with respect to the existing unit duct diameter, together with the installation of unit duct compression coupling in line splice on both ends to create a water tight seal. The cable shall be reinstalled and respliced as specified. The hollow foundation shall be filled with densely packed sand. The breakaway couplings or breakaway device and/or hardware, shall not be used to align and reset the pole.

All work shall be performed in a safe manner, include necessary area restoration and shall meet the requirements of Articles 836.03(d) and 1070.01 of the Standard Specifications for Road and Bridge Construction, current version.

Method of Measurement. Foundation, modification of concrete or metal, shall be counted, each, modified.

Basis of Payment. This item will be paid at the contract unit price per each for FOUNDATION, MODIFICATION FOR CONCRETE OR METAL, which shall be payment in full for the work as described herein.

LGF1 GROUND FIELD

Description. This item shall consist of furnishing materials and labor for the installation of a ground field, which shall consist of 3 (three)-ground rod access wells in a 10ft. triangle connected via bare copper wire as specified herein, at locations indicated by the Engineer.

Section 806 and Article 1087.01 of the Standard Specifications for Road and Bridge Construction, current version, shall apply to this pay item.

Materials. Each of the 3 (three) ground rod access wells shall consist of a 5/8 in. X 10' copper clad ground rod in a 12 in. minimum diameter PVC enclosure with fiberglass flush covers.

Installation. The 3 (three) ground rod access wells shall be installed in a typical 10FT. triangle connected via 2/O bare copper wire by exothermic welds. No ground well shall be placed in the concrete pad in front of the lighting controller.

The removable flush cover shall be attached to the PVC enclosure via stainless steel hexhead screws.

The ground rods shall be buried 12 in. below grade and the access well shall be filled with crushed stone to point 36 in. below grade.

The 2/O bare copper wire leaving the ground rod access well closest to the lighting controller cabinet, shall be exothermically welded and enter the lighting controller cabinet foundation via a 1 in. diameter rigid steel conduit.

Method of Measurement. Ground field shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for GROUND FIELD, which shall be payment in full for furnishing and installing the item as specified herein.

LP01 LIGHT POLE, KIT

Description. This item shall consist of removing existing damaged basic materials, and furnishing and installing new basic materials such as new lamp, fuses, fuse holder, decal, pole wire, pole cap, or photocell if specified, hardware, nut covers, hand hole door and grommets in conjunction with the use of a light pole from State's storage facility, and utilizing one or two mast arms and luminaires. This item shall also include the removal of old decals, accident reference markers and graffiti from used poles prior to installation at new locations.

Materials. Materials shall be in accordance with Section 1065 and 1066 of the Standard Specifications for Road and Bridge Construction, Current version.

Installation. Installation shall be in accordance with Section 830 of the Standard Specifications for Road and Bridge Construction, Current version.

The luminaire shall be cleaned from inside/outside, replace bulb with new one rated for minimum of 40,000 hrs. equal or better than Sylvania ET 18 – 67584 and test before installation.

Method of Measurement. Light pole kit for state stock light pole, shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for LIGHT POLE, KIT which shall be payment in full for removing damaged materials, and furnishing and installing all new materials including the necessary hardware as specified herein.

LP02 LIGHT POLE UNIT, INSTALL ONLY

Description. This item shall consist of retrieving from State's storage facility (if required), loading, transporting and installing an aluminum light pole unit which is a standard, davit, or painted davit light pole with (all sizes) mast arm or twin mast arm, and (all types) luminaire(s), complete with appurtenances, length of 10 to 60 feet and all required hardware including bolt covers as specified herein.

Installation. Installation shall be as described in Section 830, except that the light pole shall be set plumb on the foundation without the use of shims, grout or any other leveling devices under the pole base. The mast arm or arms shall be set at right angles to the centerline of the pavement. (The leveling area of the luminaire shall be set in a plane parallel to the roadway taking into consideration the upgrade or downgrade and the super-elevation of the roadway).

The Contractor shall transport, handle and store (as applicable) the metal light pole in complete conformance with the manufacturer's recommendations.

The luminaire shall be washed and relamped as specified under Light Pole Kit. This item shall include the applicable luminaire (with pole wire and fusing), foundation, anchor bolts, and breakaway device which shall be provided under separate pay item.

Poles shall not be installed until luminaires are available for installation which shall be at the same time the poles are installed. Poles shall not be installed and left standing without a coordinated installation of mast arm and luminaire.

Method of Measurement. Light pole unit, shall be counted, each, installed.

Basis of Payment: This item shall be paid at the contract unit price each for LIGHT POLE UNIT, INSTALL ONLY, of the length and mounting height as indicated by the Engineer, which shall be payment in full for the work as specified herein. This item shall not be paid unless the coordinated assembly, including mast arm, luminaire, and breakaway device if specified, is complete.

LP03 LIGHT POLE UNIT, REMOVAL AND SALVAGE

Description. This item shall consist of the disconnection, removal, dismantling, and transportation to the State's storage facility and unloading as salvage, a light pole unit, which is a standard, davit, or painted davit light pole with (all sizes) arm or twin arm, and (all types) luminaire(s), complete with appurtenances, as specified herein and as directed by the Engineer. Removal of the associated conduit, wire and junction boxes shall be included in this item. This pay item shall also include all storage documentation as required by the Engineer.

General. Light pole removal shall be in accordance with Section 842 of the Standard Specifications for Road and Bridge Construction, current version. Proper documentation of owner salvage is required.

Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition.

No removal work shall be permitted without approval from the Engineer.

Any damage resulting from the removal and/or transportation of the light pole shall be repaired, to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Method of Measurement. Each light pole unit, which is removed, delivered to storage, unloaded, inspected, and documented properly, shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the contract unit price each for LIGHT POLE UNIT, REMOVAL, SALVAGE, which shall be payment in full for the removal and disposition of light pole as specified herein.

LP04 WOOD POLE UNIT, INSTALL ONLY

Description. This item shall consist of retrieving from State's storage, loading, transporting and installing a wood pole with mast arm(s) and luminaire(s) complete with appurtenances of the mounting height as specified herein, including all necessary hardware and accessories required. The wood light pole unit shall be paid separately.

Installation. Installation shall be in accordance with Section 830.03 (c) of the Standard Specifications for Road and Bridge Construction, current version.

The Contractor shall be paid separately for CCTV and Traffic Signal installation using the non-routine pay items if the wood pole is used for CCTV on Traffic Signal.

The Contractor shall transport and handle the light pole in complete conformance with the manufacturer's recommendation.

"Mechanical Damage. Poles are not acceptable if they contain indentations attributed to loading or handling slings that are 1/4 inch or more deep over 20% or more of the pole circumference, or more than 1/2 inch deep at any point. Other indentations or abrasions, for example, forklift damage, chain-saw damage, etc., shall not be more than 1/10 the pole diameter at the point of damage up to a maximum of 1 inch. Such damage is permitted in an oversized section, where the excess of wood shall be taken into consideration in evaluating the effects of the damage. In any case, the circumference for a given class is still required to be not less than the specification minimum."

Method of Measurement. Wood pole unit of the mounting height as specified, complete with necessary hardware shall be counted, each, installed.

Basis of Payment. This item shall be paid at the contract unit price each for WOOD POLE UNIT, INSTALL ONLY, of the mounting height up to 90', shall be payment in full for installing a wood pole unit with necessary appurtenances as specified herein.

LP05 WOOD POLE UNIT, REMOVAL AND SALVAGE

Description. This item shall consist of disconnecting, completely removing, dismantling, transporting to the State's storage, and unloading as salvage, a wood pole with mast arm(s) and luminaires(s) complete with appurtenances, as specified herein. Removal of the CCTV and Traffic Signal, associated conduit, wire and junction boxes shall be included in this item. Proper documentation of the owner's salvage is required with this pay item.

General. Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition. No removal work shall be permitted without approval from the Engineer. Any damage resulting from the removal and/or transportation of the light pole unit shall be restored, to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Method of Measurement. Each wood pole unit, complete with CCTV, Traffic Signal, Arm and Luminaire which is removed, delivered to storage, unloaded, inspected, and documented properly, shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the contract unit price each for WOOD POLE UNIT, REMOVAL AND SALVAGE, complete with CCTV, Traffic Signal, Arm and Luminaire, which shall be payment in full for the removal and disposition as specified herein.

LPN1 PANEL, DISTRIBUTION

Description. This item shall consist of removing (if upgrading) furnishing and installing, a lighting and distribution panel of the amperage (up to 400 Amps) and number of poles (up to 42) specified for lighting and/or equipment with branch breakers as specified by the Engineer.

General Requirements. The panel with all of its electrical components and parts shall be assembled in a neat orderly fashion. All of the electrical cables shall be installed in a trim, neat, professional manner. The cables shall be trained in straight horizontal and vertical directions and be parallel, next to, and adjacent to other cables whenever possible. The completed controller shall be UL listed as an industrial control Panel under UL 508 and UL 98, service entrance rated panel.

If the enclosure of the existing service or distribution panel is in good condition, the Contractor may use the existing enclosure and replace only the panel board upon approval by the Engineer.

Materials. The panel board shall be test-verified by, and listed with, Underwriters Laboratories, Inc. and shall meet all NEMA standards for panelboards. Panel board shall be designed for sequence phase connection of branch circuit devices to allow complete flexibility of circuit arrangement (1,2 or 3 poles) to evenly balance the electrical load on each phase. Main lugs shall be mechanical, solderless type, and approved for Cu or Al conductors. The chassis shall be sturdy, rigid and shall assure accurate alignment of interior with panel front. The fronts (trims) and flush-type lock/latch handle assembly shall have an appearance equivalent to an ANSI-61 light gray finish. Wiring gutters shall be furnished in accordance with Underwriters' Laboratories Inc. standards.

Main Breaker (omit if main lug only panel). The main breaker shall be of the same manufacturer as the lighting or distribution panel. The electrical requirement shall be of the voltage, phase and ampacity of the lighting or distribution panel. The lugs of the main breaker shall be sized to handle the required cable size of the incoming cable.

Unless otherwise indicated, main breakers shall be standard UL-listed molded case, thermal-magnetic bolt-on type circuit breakers with trip-free indicating handles. Unless otherwise indicated, main breakers shall have a UL-489 interrupting rating of not less than 35,000 rms symmetrical amperes at 480 volts and 65,000 rms symmetrical amperes at 240 Volts. Multi-pole main breakers larger than 100 amps size shall have instantaneous adjustable magnetic trip settings. The main breaker shall be equipped with auxiliary contacts.

The interrupting capacity shall be capable of removing a fault at the applied voltage without damage to the breaker. The breaker may be a fixed trip or interchangeable trip as specified by the engineer. The breaker shall be specified as "fully rated" unless noted otherwise. The main breaker shall be a thermal magnetic trip breaker unless noted otherwise.

Top feed or bottom feed should be as specified. The "on/off" position shall be clearly visible and designed to operate in a vertical plane "on" up, "off" down. A tripped indicated of the breaker shall be clearly visible. Lugs on the breaker shall be suitable for 75 degrees Celsius wire. The breaker shall be UL listed for use in lighting and distribution panels.

Circuit Breakers. All feeders, branch circuits, and auxiliary and control circuits shall have overcurrent protection. Unless otherwise indicated, the overcurrent protection shall be by means of circuit breakers.

Unless otherwise indicated, circuit breakers shall be standard UL-listed, molded case, thermal-magnetic, bolt-on-type circuit breakers with trip-free indicating handles.

Unless otherwise indicated circuit breakers shall have a UL-listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated circuit voltage for which the breaker is applied.

The number of branch circuit breakers shall be as indicated on the control cabinet detail drawings or lighting system wiring diagram, whichever is greater, plus two (2) spare circuit breakers.

Ground & Neutral Bus Bars. Separate ground and neutral bus bars shall be provided. The ground bus bar shall be copper, mounted on the equipment panel, fitted with 22 connectors of the type as shown on the plans, as a minimum. The neutral bar shall be similar. The heads of connector screws shall be painted white for neutral bar connectors and green for ground bar connectors.

Standards. The panel boards shall meet the following applicable industry standards, except where noted:

1. Underwriters' Laboratories, Inc.
 - a. Panelboards: UL67
 - b. Cabinets and boxes: UL50Note: Only panelboards contain UL listed devices can be UL labeled.
2. National Electrical Code – Article 408 and 409
3. NEMA Standards: PB1
4. Federal Specifications
 - a. Panelboards: W-P-115c
 - b. Molded case breakers W-C-375a,b
 - c. Fusible Switches: W-S-865c
 - d. NFPA: 79

Removal. Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition.

No removal work shall be permitted without the approval of the Engineer.

Any damage resulting from the removal and/or transportation of the lighting distribution panel, of the size as specified, shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Installation. Service entrance equipment NEC Article 230 and UL, require that a panel used as service entrance equipment must be located near the point where the supply conductors enter the building.

A disconnectable electrical bond must be provided between the neutral and ground.

A service-entrance-type UL label must be factory installed.

The main lugs shall be secured in line with Underwriters' Laboratories standards to prevent lugs from turning or loosening when incoming cables are installed.

The current carrying parts shall be secured in place to prevent flexing and loosening or damage during and after installation.

At the branch circuit, breakers and associated wiring shall be labeled to identify the location of equipment and/or loads used.

The manufacturer's recommendations shall be followed during the installation process. The wiring connections shall be made in accordance with the National Electric Code. The Contractor shall energize the system to assure that all the components are working in accordance with their specifications and carrying rated load.

Method of Measurement. Lighting and distribution panel removed, furnished and installed shall be counted, each,

Basis of Payment. This item shall be paid at the contract unit price each for PANEL, DISTRIBUTION, of the amperage (up to 400 Amps) and number of poles (up to 42) of the amperage and number of poles specified, which shall be payment in full for removing, furnishing and installing the distribution panel, as specified herein.

LS01 SCADA, LIGHTING, RADIO CONTROL EQUIPMENT

Description. This item shall consist of furnishing and installing a SCADA Lighting Radio Control RTU unit, including all associated wiring and connectors as specified herein and as directed by the Engineer.

Materials. Refer to Article 7, Lighting System, for detailed equipment listing and construction requirements.

Method of Measurement. Each full LIGHTING SCADA radio unit that is furnished and installed as per the specifications herein, and approved by the Engineer shall be counted as an unit of payment.

Basis of Payment. This work shall be paid at the contract unit price each for SCADA, LIGHTING, RADIO CONTROL EQUIPMENT which shall be payment in full for furnishing and installing the LIGHTING SCADA radio unit, as specified herein.

LS02 SCADA, LIGHTING, RADIO INSPECTION

Description. This item shall consist of the contractor furnishing a manufacturer approved factory sales and service company to inspect the SCADA Lighting radio system for a designated power center as described herein.

Materials/Equipment. The specialty contractor shall be equipped with all recommended test equipment (see SCADA System Planner) to test the SCADA and SCADA radio systems, including a Motorola R2600A Communication system analyzer. The factory sales and Service Company shall provide all tools and manufacturer's test sets to complete all work specified herein.

Work Description. All radios, antennas, antenna line, and connectors, surge suppressers, power supplies, batteries and all appurtenances shall be tested for the site-specific radio system for each location The factory sales and Service Company shall perform the following:

1. Inspect and correct radio AFC and CTS operating parameters.
2. Visual inspection of antenna, feedline and connectors.
3. Visual inspection of interconnection between SCADA device and any controller or slave that is being used with them.
4. Check frequency, soft carrier delay, time-out timer length and status of squelch tail eliminator.
5. Check Tx/Rx audio levels and calibrate as the system requires.
6. Checks receive dbm level.
7. Terminate a service monitor to the antenna system to check for any outside harmful RF emissions, especially at those sites that have been marginal in response.
8. Check radio system Octal addressing for proper system On/Off operation.
9. Check status of battery, power supply and replace, if necessary.
10. Check VSWR of the antenna cable.

Reporting. The factory sales and service company shall submit a report consisting of data for all items stated above, the methods/means used to test and record consisting or all data values recording during

the last inspection (for comparison purposes). The report shall also include any pertinent changes made or required to the system.

Method of Measurement. Each inspection of lighting controller SCADA system radio equipment including submittal of the report and approval by the Engineer shall count as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for SCADA, LIGHTING RADIO INSPECTION.

LS03 SCADA, LIGHTING, RTU TERMINAL CONFIGURATION

Description. This work shall consist of configuring, integrating and testing a new SCADA RTU on the central lighting SCADA system for control and monitoring of the RTU through all four existing system terminals. The software integration shall be performed by a qualified systems integrator with prior experience in the integration of SCADA equipment

Work.

SCADA SERVE/CLIENT WONDERWARE PROGRAMMING FOR EACH SYSTEM TERMINAL:

6. Add the new RTU to the existing Wonderware GUI application. The individual site screen for the RTU shall be in a similar format to the existing individual site screens within the application
7. Configure Wonderware application to poll SCADA RTU CPU as well as system FIU for tag data points regarding the specific RTU.
8. Setup servers and clients for alarm notification, database and event history for that specific RTU.

SCADA FIU CPU PROGRAMMING (at Schaumburg and EMC):

1. If RTU exists as an Intrac site in the FIU, change it to be a SCADA site (SCADA CPU). If RTU is a new site, configure as a new SCADA site. This applies to both of the FIU's within the system.
2. Configure SCADA FIU's within the IDOT lighting system to poll the new RTU during the respective polling cycle.

Staging. All central configuration programming shall be completed prior to the initial check out/PM of the SCADA unit in the field. This is to assure/confirm 2 way radio communications from the field RTU the Central. Prior to commencing the software work, the integrator shall obtain from IDOT the latest copy of their application. It is the responsibility of the integrator to assure that is done and the new RTU is configured on that application. Upon completion of the updated application the Integrator shall notify IDOT that the work is complete and ready to be installed on the IDOT Lighting SCADA system. This update shall be implemented on all system computers by the software integrator. When all system updates are complete, IDOT shall be supplied a copy of all computer terminal applications on a single CD.

Testing. A checklist consisting of testing all physical I/O points and COS alarm reporting shall be submitted to the Engineer. This testing shall confirm all I/O messaging in the field is being received at the Central. In conjunction, Central system must be checked for receiving of appropriate alarms triggered in the field.

Acceptance Transition. After the appropriate testing has been completed and approved by the Engineer, the new SCADA shall be monitored for up to 2 weeks for proper operation. If any problems are to arise, all changes shall be completed at no extra cost.

Method of Measurement. Each SCADA RTU that is configured, tested, and implemented to the Lighting SCADA system as specified herein, and approved by the Engineer shall be counted as an unit of payment.

Basis of Payment. This work shall be paid at the contract unit price each for SCADA, LIGHTING RTU TERMINAL CONFIGURATION which shall be payment in full for configuring the RTU, as specified herein.

LT01–LT02 LIGHT TOWER

Description. This item shall consist of furnishing, delivering to State’s storage facility and unloading, as specified, and installing a light tower including a lowering device with ring, luminaires and lamps, as specified herein. The tower foundation shall be provided under separate pay items. The specifications for this item shall be fully coordinated with the lowering device, ring, luminaire, and foundation requirements.

Materials. Materials shall be in accordance with Article 1069.08 of the Standard Specifications for Road and Bridge Construction, current version with the following exceptions:

Revise the sixth and eighth paragraphs of Article 1069.08(a) of the Standard Specifications to read:

The handhole shall have a door with a full collar of similar material that extends over the handhole frame to exclude liquids and contaminants when closed against the flange and gasketed handhole opening. The door shall be mounted with a full-height stainless steel piano hinge or not less than two stainless steel hinges or other hinge arrangement acceptable to the Engineer. A bolt through a door and frame eyelet shall not constitute an acceptable hinge. Hinges shall be heavy duty, suitable for the weight of the handhole door. Hinges shall be welded to the handhole frame and shall be welded or attached with stainless steel nuts, bolts, and lock washers (5 minimum) to the handhole door. Rivets will not be allowed to attach any hardware. The door/opening shall be gasketed in a manner, which will prevent the entry of water into the pole, and the door shall have a tight compressive seal employing a tubular gasket with a flexible wire core. The gasket shall have a mechanical gripping action and be mounted on a metal edge inside the handhole door. The door shall be held closed with 12 gauge captive stainless steel clamps. The clamps shall be held closed with spring loaded captive clamps. The clamps shall have a depth stop feature to insure uniform sealing pressure at all clamp points. A minimum of four (4) clamps shall be used around the non hinged sides of the door assembly. A stainless steel padlock hasp and staple shall be provided for locking the door. Door hardware shall be stainless steel. The door shall be equipped with an integral door stop mechanism.”

Revise the last paragraph of 1069.08 (b), (2) Inspection, to read:

“The independent welding inspector shall send the test results directly to the Engineer at the following address:

Illinois Department of Transportation
Division of Highways, District 1
Attn: Electrical Operations
201 West Center Court
Schaumburg, Illinois 60196-1096

The cost for all independent welding inspections shall be included in the unit price for the bid item.”

Add the following to Article 1069.08(c) of the Standard Specifications:

“The primer paint shall be white polyamide epoxy, with minimum solids by volume 65%. The primer shall be applied in two coats to a total thickness of 6-8 mils dry film thickness following manufacturer’s method of application. The two primer coats shall be of different colors.

The finish paint shall be silicone-alkyd resin type paint poly-silicone enamel, minimum solids by volume 53%. The finish paint shall be applied in one coat to a 2-3 mils dry film thickness following manufacturer’s method of application. The finish paint shall be applied to the outside surface only.”

Revise the second and third paragraphs of Article 1069.08(p) of the Standard Specifications to read:

“A flexible UL Listed Class II conductor shall be installed between the lightning rod and the grounding lug on the top of the tower shaft. The conductor shall be a rope lay cable consisting of 28 strands of No. 14 AWG cooper wire. The cable shall have a minimum outside diameter of 7/16”, a cross sectional area of

58 mm², and a net weight of 1668 N per 375 pounds per 1000 ft. The same conductor shall be attached with studs and exothermic welds at tower shaft sections. The grounding conductor terminations shall be UL Listed.”

Installation. Installation and shipment shall be in accordance with Article 835.04 of the Standard Specifications for Road and Bridge Construction, current version.

Method of Measurement. Light tower shall be counted, each, furnished, and installed complete.

Basis of Payment. This item shall be paid at the contract unit price each for LIGHT TOWER, of the length as specified below, which shall be payment in full for furnishing and installing complete as specified herein. The tower foundation shall be paid under separate pay item.

LT01 LIGHT TOWER, 110 FT. OR LESS IN LENGTH
LT02 LIGHT TOWER, 111 FT. OR MORE IN LENGTH

LT03 LIGHT TOWER, IN PLACE, CLEAN AND PAINT

Description. Paint a complete or part of a light tower structure as directed by the Engineer, luminaire ring assembly and hood, including spot abrasive blast cleaning of various rusted surface areas of the structure up to a maximum of 15% of the shaft surface area and all at various installations.

General. Under this item, for a unit price per linear feet as shown in the Schedule of Prices and when directed by the Engineer in writing, the Contractor shall prepare the existing deteriorated surfaces and paint all designated surfaces of the various components of the light towers with coatings specified by the Engineer.

All identification decals shall be retained or removed, as directed by the Engineer. Replacement of decals will be paid separately. Removal of all designated decals shall be incidental to this pay item.

Dependent upon lane closure requirements at each light tower location, traffic control and protection may be paid separately.

The work involves the surface preparation and application of coating materials on existing steel light towers greater than 80 ft. high.

The work includes, but is not limited to, the surface preparation and coating application work for the following: Structural Steel as defined in Section 2.1 of the AISC "Code of Standard Practice for Steel Buildings and Bridges" and Other Steel or Metal Items as defined in Section 2.2 of the AISC "Code of Standard Practice for Steel Buildings and Bridges."

The Contractor shall provide all management, supervisory, administration, clerical, quality control personnel, labor forces and all other services required to carry out his surface preparation work, coating and coating related operations, including the furnishing, handling and removal of spent abrasive material, if required and all testing and reporting as specified herein.

Decal Replacement Work. All decals, which are found to be worn, torn, cracked, partially missing, etc., shall be removed. Decals, which appear to be in good condition and fully readable, may remain in place. The Engineer will make the final decision regarding any question relative to the removal and/or replacement of decals. Decals, which are determined by the Engineer to remain in place, shall be covered (masked) prior to new coatings being applied.

Tower Number and Luminaire Quantity Decals. Following sufficient curing of the finish coat, new tower number and luminaire quantity decals 8 inch x 9 inch shall be affixed to poles at locations where the existing decals were removed during the surface preparation process. The Engineer will determine when the decal

may be replaced after the finish coat has had sufficient time to cure. Normally, the waiting period will be about 4 to 6 months. The Contractor will be paid separately for the furnishing and reinstalling new decals.

Accident Reference Marker Decals. Accident Reference Marker decals which have been removed shall be replaced within one (1) month following the placement of the final coat. This work will be paid separately.

Responsibilities. The Contractor shall be responsible for:

The planning and performance of all scaffolding work, ventilation, enclosures, protective covers, and utilization of labor and equipment.

Supplying and maintaining of tools, test equipment, enclosures, scaffoldings, etc.

Purchasing and/or requisitioning of supplies.

Performing tests to assure proper lasting equipment performance and required dry film thickness of coatings.

Relocating and/or removing all temporary equipment, enclosures, scaffolding, etc. at the completion of the work, or as directed by the Engineer throughout the course of the job schedule to permit the work of others.

Providing the testing and inspection, equipment, and services for all surface preparation and material application.

Protecting all existing equipment, piping, ducts, etc. and complete coated areas from damage resulting from blasting work and/or misapplied coating materials.

The quality and appearance of the finished work. He/she shall carefully examine this specification and shall be thoroughly familiar with the physical makeup of the areas to be painted and the established schedule and completion date.

Storage Conditions on Site. Extreme care must be exercised in the handling and storage of all materials to insure that the specified coating systems can be properly applied.

Prior to use on the structure, materials, equipment, scaffolding, etc. furnished by the Contractor may require storage for limited periods as approved by the Engineer. Any outdoor storage of materials shall be protected by the Contractor against any kind of damage. The Contractor shall also provide a safe, secure area for this equipment away from the general public.

Health and Safety. The Contractor shall observe all OSHA, State and local laws, ordinances and regulations pertaining to health and safety. The precautions indicated on the paint containers with regard to fire and safety, as well as the laws of the State of Illinois, shall be observed.

The Contractor shall conform to all the requirements of OSHA 29 CFR 1910.1200 pertaining to the communication of information regarding hazards involved in the work.

The importance of safety to all workers on the project shall be recognized, and accident prevention shall be integral part of the Contractor's operations. The Contractor shall cooperate with the Illinois Department of Transportation safety programs.

Material Safety Data Sheets shall be provided by the manufacturer for each product and shall be conspicuously posted.

The Contractor shall handle all wastes from the operation in accordance with the Resource Conservation and Recovery Act (RCRA) located in 40 CFR Parts 260-266 of the Code of Federal Regulations.

The Contractor shall maintain the premises free from rubbish at all times and upon completion, shall carefully clean up all dirt and rubbish left or resulting from the work, and dispose of it in such place and manner as directed by the Engineer.

General Work Provisions. All coating work shall be done in a careful workmanlike manner using the materials specified herein in strict accordance with this Specification.

Surface preparation and coating application shall be in accordance with the Coating Schedule contained herein. The manufacturer's specifications regarding the mixing, thinning, application, drying and general handling of the various materials shall be followed as being supplementary to this Specification.

Any false work (scaffolding, ladders, etc.) required for surface preparation and/or painting shall be designed by the Contractor for loads not less than those established by the State of Illinois, local building codes and (OSHA) 29 CFR 1910 and 29 CFR 1926.

Prior to initial application of coatings, the Contractor or his agent will inspect representative areas to assure conformance with his requirements. The Contractor will perform additional inspections to assure that all coating application is in accordance with his Specification.

All coatings shall be applied as recommended by the manufacturer. Thinning shall be done only as recommended by the manufacturer for a particular application.

The surfaces to be coated shall be dry. No coating work shall be done in damp weather (rain, fog, mist, dew, etc.) which might cause a slight amount of moisture to collect or condense on the surface. No coating work shall be done when the ambient air temperature is below 50 degrees Fahrenheit or above 100 degrees Fahrenheit. No coating work shall be done if the relative humidity exceed 85% or if the substrate temperature is not at least 5 degrees Fahrenheit above the dew point.

Coatings shall be applied in a workmanlike manner by skilled applicators. All coatings must be evenly spread and smoothly flowed on and shall be free from runs and sags. Care shall be taken to apply a film of uniform thickness that completely covers all surfaces required to be coated and avoids local thin spots.

All coating materials shall be as manufactured by Keeler & Long, Inc., or equivalents approved in writing by the Engineer, and shall be as specified in the Coating Schedule contained herein. Intermixing of materials from different manufacturers will not be permitted.

All coating materials delivered to or received at the job site shall be in original unopened and sealed containers bearing manufacturer's name, type of designation, batch number and shelf life. All coatings shall be mixed in strict accordance with the manufacturer's written instructions, and thinning will not be permitted unless specified in those instructions.

All containers of coatings shall remain unopened until ready for use. The oldest of each kind of coating shall be used first. Containers, which have been opened, shall be used first.

Any coating material found not be in conformance with the specification shall be removed from the site, and from the structure, if already applied, at the Contractor's expense. If reapplication to a formerly coated surface is required, it shall be treated as if it had never been coated insofar as this Specification is concerned.

All coatings shall be stored in an area that is well-ventilated and free from excessive heat, sparks, flame, or the direct rays of the sun. The ambient temperature of the storage areas shall be maintained within the range specified in the Coating manufacturer's printed instruction, unless otherwise specified.

Coatings, which have livered, gelled, exceeded manufacturer's recommended shelf life, or otherwise deteriorated during storage shall not be used, and shall be removed promptly from the site.

Mixing of coatings shall be done in accordance with manufacturer's printed instructions. Power mixers may be used, but it should be noted that the heat generated could shorten the pot life of the coating.

Catalysts and/or thinners shall be added to the coatings strictly in accordance with the manufacturer's printed instructions. Uniform mixing shall be assured by checking for consolidated pigment remains.

If the coatings became thick in cool weather, they shall preferably be heated in the container by the use of paint heaters and not thinned by the addition of solvents. Deviations from manufacturers recommended storage temperature ranges will not be permitted without manufacturer's approval. The Contractor shall furnish, to the Engineer, all information on materials and supplies utilized by the Contractor.

Surface Preparation. The Contractor shall be wholly responsible for finish of his work, and shall not commence any coating work until the surface to be coated has been properly prepared in accordance with the surface preparation portion of the Coating Schedule contained herein. Chemical contamination shall be removed by washing with clean water, steam, neutralizing solutions, detergents, or other methods recommended by the Coating manufacturer.

Each designated surface area of each light tower to be painted shall be thoroughly washed clean using a sufficient number of cleaning cloths. The cloths shall be changed frequently to avoid using contaminated cleaning materials.

7. Application of Coating Materials. Coatings may be applied by brushes, roller, or paint mitt. All methods of application shall be in accordance with the best practice as recommended by the manufacturer.

When coatings are applied by brushing or rolling, the surface shall be cross-brushed or cross-rolled to secure uniformity of surface and the specified paint film thickness.

Coating Applicators:

Based upon the method of application selected, the proper applicator may be obtained from Best Libel, Philadelphia, PA. 19148, or Fond du Lac, WI. 54935

Brushes: 3 inch x 1 1/16 inch x 3-5/8 inch
Model: Beauty # 0-10015-00

Pipe Painter: 7 inch x 7/8 inch
(Roller) complete with cover, # 0-94580-00

Mitts: Lambskin PM-1 #0-94500-00
or
Synthetic PM-4 #0-94520-00

All surfaces shall be primed the same day as they are prepared. Finish coats shall be applied as soon as practicable after cleaning. If the surface becomes contaminated in the interim, it shall be refinished to the original cleanliness requirements.

Adequate ventilation must be assured, at all times, for proper drying.

Film thickness of the coating being applied shall be periodically checked using a wet film thickness gauge. Dry film thickness shall be calculated from wet film thickness and volume solids and as recommended by the coating manufacturer. In addition, each coat shall have been visually inspected for holes and thin spots before the next coat is applied.

Surfaces, which have been coated, shall not be handled, worked on, or otherwise disturbed until the coating is completely set. Sufficient time shall elapse between coats to permit them to dry hard. All layers of coated surfaces shall be unscarred and completely integral at the time of application of all succeeding coats.

Each coat shall follow the preceding coat within the time limits set by the manufacturer.

After the application of the scheduled number of coatings, the total dry film thickness (DFT) shall be within the range of the sum of the thickness of the coats as specified. The Contractor shall apply enough paint to adequately cover and to fulfill the DFT as specified in the Coating Schedule continued herein no matter how many coats are necessary.

All finished coating surfaces shall be uniform texture, free of any runs, drips, sags or other detrimental defects, and acceptable to the Owner.

Misplaced coating materials shall be promptly removed and the surface shall be made thoroughly clean and satisfactory to the Engineer.

Copies of manufacturer's application guides or printed instructions shall be conspicuously posted wherever materials are being prepared for application.

Cloths, cotton and waste material which might constitute a fire hazard, shall be placed in closed metal containers or removed from the working area at the end of each day's work.

The Contractor shall provide portable fire extinguishers of suitable type and sufficient number to permit placing at least one (1) extinguisher in any areas where coating with fume-creating or flammable products is in progress, and where coatings are stored and mixed. No smoking shall be permitted in these areas and the Contractor shall be responsible for policing the work.

All protective covers shall be removed upon completion of paint application.

Applicable Documents. The following codes, specifications and standards shall be considered integral parts of this specification. The latest issue of these codes and standards, and other tests and standards incorporated therein as applicable, in effect during the term of this contract, shall apply, unless otherwise noted.

Steel Structures Painting Council (SSPC) Pittsburgh, Pennsylvania 15213

Steel Structures Painting Manual, Volume 1, Good Painting Practice

Steel Structures Painting Manual, Volume 2, Systems and Specifications

SSPC-Vis.-1 No. 1 Pictorial Surface Preparation Standards for Painting Steel Structures.
Pay item LTP1 continued:

U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Washington, DC 20210

Title 29 Code of Federal Regulations, Occupational Safety and Health Act of 1970.
29 CFR 1910, 29 CFR 1926

Code of Federal Regulations, Resource Conservation and Recovery Act (RCRA)
40 CFR Parts 260-266

Coating Application Daily Log. The Contractor shall furnish all necessary test instruments to complete the information required on Log Form L-DA. The completed reporting logs shall be faxed to the Engineer as a record of each days work progress. A separate log shall be completed for each tower worked upon by the Contractor. Refer to Log Form L-DA at the end of this section.

Test Equipment:

The test equipment may be obtained from KTA-TATOR Co., Pittsburgh, PA. 15275
Telephone: 1-800-KTA-GAGE.

1. Surface Temperature Thermometer
Part # PTC 312F
2. Sling Psychrometer
Part # 127012
3. Weather Psychometric Tables
Part # WB235
4. Dry and Wet Film Thickness Gauges

Project Status Summary Log - Form L-TP

In addition to the Coating Application Daily Log, the Contractor shall submit a Daily Project Status Summary Log Form L-TP, showing the status of each light tower to be painted on the overall project. This information shall include the specific stage of operations at each light tower. Refer to Log L-TP at the end of this section.

Scope of Work:

LIGHT TOWER SHAFT

Surface Preparation. The tower shall be spot abrasive blasted as required in accordance with SSPC SP-6 Commercial Blast Cleaning and/or Power Tool Cleaned to SSPC SP-3, depending on overall condition. The remaining surface shall then be hand tool cleaned in accordance with SSPC SP-2 to remove all loose corrosion and existing paint. All oil, grease, dirt, salt and other surface contaminants shall be removed in accordance with Steel Structures Painting Council's SSPC SP-1 Solvent Cleaning Specification.

Coating System.

Prime Coat. The primer shall be applied to the entire designated area of each tower and be a two component, polyamide epoxy with the following characteristics:

Solids by Volume	66% ± 3%
Dry Film Thickness	4.0 - 6.0 mils
Color	Light Gray or White
VOC Content	2.6 Pounds/Gallon (or less)
Weight/Gallon	13.6 ± 0.5 (pounds)
Shelf Life	2 Years (minimum)
Flash Point	85 degrees F ± 2 degrees F (Pensky-Martens)

Finish Coat. The finish shall be applied to the entire designated area of each tower and be a single component co-polymerized silicone-alkyd with 20% - 30% silicone content, and shall have the following characteristics:

Solids by Volume	53% ± 3%
Dry Film Thickness	1.5 - 2.5 mils
Color	White or Hansford Gray
VOC Content	3.0 Pounds/Gallon (or less)
Weight/Gallon	9.0 ± 0.3 (pounds)
Shelf Life	2 Years (minimum)
Flash Point	105 degrees F ± 2 degrees F (Pensky-Martens)

LUMINAIRE RING ASSEMBLY AND HOOD

Surface Preparation. All oil, grease, dirt, salt and other surface contaminants shall be removed in accordance with Steel Structures Painting Council's SSPC Sp-1 Solvent Cleaning. The surface shall then be Hand Tool Cleaned in accordance with SSPC SP-2 to remove all loose corrosion and existing paint.

Coating System. Same as finish coat listed above.

CLEATS, WELDS AND HAND HOLE DOOR HARDWARE SURFACES

Surface Preparation. Prepare surfaces using the SSPC SP-11 power tool cleaning to bare metal to remove all rust and existing coating.

Coating System.

Prime Coat. The prime coat shall be the same as the shaft prime coat described above.

Finish Coat . The finish coat shall be the same as the shaft finish coat described above.

Method of Measurement. The light tower length for payment of all work described herein shall be measured, in feet, in place, and shall be measured as the distance in feet from the top head frame assembly to shaft's base plate or any part thereof, (Refer to Article 7.7.5) spot blast clean and paint.

Basis of Payment. This item shall be paid at the contract unit price, per foot, of tower length for LIGHT TOWER, IN PLACE, CLEAN AND PAINT (GRAY OR WHITE), which shall be payment in full for all labor, materials and equipment required to complete the work as described herein.

LT04 LIGHT TOWER, REMOVE AND RE-ERECT

Description. This item shall consist of removing an existing light tower for inspection and/or retrofitting, and reinstalling the tower on foundation all during the same work day as designated by the Engineer. All appurtenant materials and work required for removing and reinstalling shall be included as part of this item. The retrofitting work as specified by the Engineer will be paid separately.

General. The existing light tower shall be disconnected and removed from the existing foundation by way of removing the anchor bolt nuts and lifting the light tower from the foundation.

Any damage sustained to the light tower during removal operations shall be repaired, or replaced in kind, to the satisfaction of the Engineer at Contractor's own expense.

Unless otherwise indicated, the light tower shall be reinstalled immediately after inspection and/or modification work the same day on the foundation. The electric power cables shall be reconnected so that tower becomes operational that evening without interruption.

All components shall be replaced upon re-installation of the tower. The anchor nuts shall be repainted. The nuts shall be tightened in compliance with torque specifications recommended by the manufacturer of the lighting unit.

As applicable, recently calibrated dynamometers shall be employed by the Contractor for measuring the applied force during final assembly.

The Contractor shall remove the stainless steel screening at the base of the tower, prior to the removal of the tower, and after re-erecting and plumbing the tower, shall reinstall the screening and tighten all anchor bolt nuts, to the satisfaction of the Engineer. The Contractor shall exercise care in the removal of the screening so it remains in a serviceable condition. Replacement screening shall be included in this pay item.

A penetrating oil shall be applied to all anchor bolt nuts prior to removing. The Contractor shall exercise extreme care in the removal of the anchor bolt nuts so that no damage occurs to the anchor bolt threads. If an anchor bolt nut cannot be easily removed, the Contractor shall consult the Engineer to determine the best method to be used to remove the anchor bolt nut.

Any anchor bolt nuts damaged in the removal process or which the Engineer determines should not be reused, shall be replaced with anchor bolt nuts meeting the requirements of Article 1070.03 of the Special Provisions for Road and Bridge Construction, current version, for Light Towers.

Method of Measurement. Light tower shall be counted, each, remove and re-erect.

Basis of Payment. This item shall be paid at the contract unit price each for LIGHT TOWER, REMOVE AND RE-ERECT, which shall be payment in full for performing the work as specified herein.

LT05 LIGHT TOWER, INSTALL ONLY

Description. This item shall consist of erecting a light tower as specified herein and as directed by the Engineer. Luminaire, lamp, lowering device and foundation shall be provided under separate pay items. This item shall be fully coordinated with the luminaire, lowering device, and foundation requirements. The light tower shall be paid separately.

Installation. Installation and shipment shall be in accordance with Article 835.04 of the Standard Specifications for Road and Bridge Construction, current version.

Method of Measurement. Light tower shall be counted, each, installed.

Basis of Payment. This item shall be paid at the contract unit price each for LIGHT TOWER, INSTALL ONLY, which shall be payment in full for installing the item as specified herein.

LT06 LIGHT TOWER, LOWERING DEVICE FOR RETROFIT

Description. This item shall consist of removing, furnishing and installing a light tower lowering device for retrofit with 6, 8, or 12 luminaire ring, as specified herein. The lowering device shall be an equivalent to the existing lowering device. The drive mechanism shall be compatible with other existing towers in the same power center location that have previously been retrofitted.

Materials. Materials shall be in accordance with Article 1069.08 (e) of the Standard Specifications for Road and Bridge Construction, current version, except the motor as described under Article 1069.08 (k) shall be omitted. The Contractor shall make sure that the drive is compatible to the existing external drive used for other locations.

Removal. Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged a to type, size and condition. No removal work shall be permitted without approval from the Engineer.

Any damage resulting from the removal and/or transportation of the light tower shall be repaired, to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Transportation. The Contractor shall transport, handle and store (as applicable) the light tower in complete conformance with the manufacturer's recommendations. The Contractor shall make arrangements to transfer the material from the State's storage facility or directly from the manufacturer's facility to the job site.

Inspection and Acceptance. The Contractor shall examine the light tower in the presence of the Engineer and after acceptance shall be held responsible for preservation of the condition of the light tower, as it was at the time of acceptance, until the Final Acceptance Inspection.

Installation Procedure. The installation shall be in accordance with applicable articles of Section 835 of the Standard Specifications for Road and Bridge Construction, current version, and the following:

The Contractor shall remove existing luminaires, ring, fixtures and complete winch assembly, and install a complete new lowering device without any field welding or structural alterations of the handhole frame or doors. The pole shall be readied for the installation of new fixtures including the required counter weights.

Raising and Resetting the Tower. After the tower is reset, the tower assembly shall be inspected and checked for satisfactory operation through a full cycle. After the operation of the full cycle, make final adjustments. Work shall be completed as required, with no more than one night of down time per tower.

Method of Measurement. Light tower lowering device for retrofit with 6, 8, or 12 luminaire ring removed, furnished and installed shall be counted, each.

Basis of Payment. This item shall be paid at the contract unit price each for removing, furnishing and installing LIGHT TOWER LOWERING DEVICE FOR RETROFIT, for 6, 8 or 12 luminaire ring which shall be payment in full for the item as specified herein.

LT07 CABLE, COMBINATION CCTV & LIGHTING, INSTALL

Description. This item shall consist of removing the existing power cable and installing a combination CCTV and power cable in a high mast tower, as specified by the Engineer. In addition, the Contractor shall coordinate with the Department's Advanced Systems Maintenance Contract (ASMC) contractor to install a camera mount, a camera and terminate the CCTV cable on the high mast tower, as designated by the Engineer. All appurtenant materials and work required for removing the old cable, reinstalling the new cable, splitting the cable at both ends and securing the CCTV and power cables, in an approved manner, with heat-shrinkable tubing; terminating the power cable for lighting shall be included as part of this item. The camera installation and its terminations, as specified by the Engineer, will be paid separately under ASMC

Removal. Prior to the removal of power cable, the Contractor shall conduct a thorough inspection with the Engineer, and shall log as to its type, size and condition.

No removal work shall be permitted without the approval of the Engineer. Any damage resulting from the removal of the lighting power cable, as specified, shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Materials. The Contractor shall use the combination CCTV and lighting cable from State Stock purchased under a separate non-routine pay item and stored at the warehouse.

Transportation. The Contractor shall transport and handle (as applicable) the combination CCTV and lighting cable in complete conformance with the manufacturer's recommendations.

Installation. The Contractor shall remove the old power cable in the tower by lowering the ring down and replace with a combination CCTV and power cable. The power cable shall be terminated in the junction box on the ring and to the four pin connector at the hand hole of the tower. The CCTV cable shall be fed and terminated through the ring to the tenon arm and to the camera mount by the Contractor. If the power cable and/or CCTV cable are damaged during the installation, the Contractor shall repair or replace the cable, as directed by the Engineer.

Unless otherwise indicated, the removal of lighting power cable and replacement of combination CCTV and lighting cable shall be coordinated with advanced system personnel to install the camera and terminate the CCTV cable to the camera at the same time. The electric power cables shall be reconnected so that tower becomes operational that evening without interruption in service.

Method of Measurement. Removal of power cable and installing a combination CCTV and lighting cable with terminations complete, as approved by the Engineer, shall be counted, each as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for COMBINATION CCTV AND LIGHTING CABLE, INSTALL, as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

LU01 LUMINAIRE, EIGHT (8) FT. FLUORESCENT

Description. This item shall consist of furnishing and installing a fluorescent luminaire up to twenty (20) feet mounting height for maintenance yard, sign shop or other facilities, with two eight (8) feet lamps, of the wattage and operating voltage as specified herein.

Materials. The housing shall be one piece constructed of die-formed cold rolled steel with longitudinal V-grooves in channel for strength. The channel cover shall be secured by latch for easy access to wire way. The luminaire shall be designed and constructed in accordance with the requirements of UL. The mounting accessories, hardware and brackets, shall be made out of steel for environmental conditions.

The finish shall be five stage iron phosphate permanent ensuring superior paint adhesion and corrosion resistance. Reflector and channel finished with a high gloss baked white enamel. Reflector is painted after fabrication.

The ballast shall be multi-voltage, thermally protected, resetting, class P, HPF, non-PCB, UL listed and CSA certified. The fluorescent fixture shall be equivalent to Lithonia Lighting model TEJS or better.

A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

Luminaire information submitted for approval shall include any recommendations of the manufacturer for storage as provided under this contract.

The packaging of the luminaires shall incorporate the provisions recommended by the manufacturer for storage.

Installation. The luminaires shall be installed in accordance with the plans as specified by the Engineer. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Luminaire shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing a LUMINAIRE, FLUORESCENT EIGHT (8) FT., of the type indicated, wattage and operating voltage indicated or shown on the plan, which shall be payment in full for the item as specified herein.

LU02 LUMINAIRE, FOUR (4) FT. FLUORESCENT

Description. This item shall consist of furnishing and installing a fluorescent luminaire up to twenty (20) feet mounting height for maintenance yard, sign shop or other facilities, with two four (4) feet lamps, of the wattage and operating voltage as specified herein.

Materials. The housing shall be one piece constructed of die-formed cold rolled steel with longitudinal V-grooves in channel for strength. The channel cover shall be secured by latch for easy access to wire way. The luminaire shall be designed and constructed in accordance with the requirements of UL. The mounting accessories, hardware and brackets, shall be made out of steel for environmental conditions.

The finish shall be five stage iron phosphate permanent ensuring superior paint adhesion and corrosion resistance. Reflector and channel finished with a high gloss baked white enamel. Reflector is painted after fabrication.

The ballast shall be multi-voltage, thermally protected, resetting, class P, HPF, non-PCB, UL listed and CSA certified. The fluorescent fixture shall be equivalent to Lithonia Lighting model EJS or better.

A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

Luminaire information submitted for approval shall include any recommendations of the manufacturer for storage as provided under this contract.

The packaging of the luminaires shall incorporate the provisions recommended by the manufacturer for storage.

Installation. The luminaires shall be installed in accordance with the plans as specified by the Engineer. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Luminaire shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing a LUMINAIRE, FLUORESCENT FOUR (4) FT., of the type indicated, wattage and operating voltage indicated or shown on the plan, which shall be payment in full for the item as specified herein.

LU03 LUMINAIRE, FLUORESCENT, HIGH BAY

Description. This item shall consist of furnishing and installing a fluorescent luminaire high bay system for mounting height 15' – 40' for maintenance yard, sign shop or other facilities, with four, four (4) feet lamps, of the wattage and operating voltage as specified herein.

Materials. The housing shall be one piece constructed of die-formed cold rolled steel with longitudinal V-grooves in channel for strength. The channel cover shall be secured by latch for easy access to wire way. The luminaire shall be designed and constructed in accordance with the requirements of UL. The mounting accessories, hardware and brackets, shall be made out of steel for environmental conditions.

The finish shall be five stage iron phosphate permanent ensuring superior paint adhesion and corrosion resistance. Reflector and channel finished with a high gloss baked white enamel. Reflector is painted after fabrication.

The ballast shall be multi-voltage, thermally protected, resetting, class P, HPF, non-PCB, UL listed and CSA certified. The fluorescent fixture shall be equivalent to Lithonia Lighting model IBZ or better.

A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

Luminaire information submitted for approval shall include any recommendations of the manufacturer for storage as provided under this contract.

The packaging of the luminaires shall incorporate the provisions recommended by the manufacturer for storage.

Installation. The luminaires shall be installed in accordance with the plans as specified by the Engineer. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Luminaire shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing a LUMINAIRE, FLUORESCENT, HIGH BAY, of the type indicated, wattage and operating voltage indicated or shown on the plan, which shall be payment in full for the item as specified herein.

LU04 LUMINAIRE, FLUORESCENT, FOR WET LOCATIONS

Description. This item shall consist of furnishing and installing, a fluorescent luminaire for the weigh station pit area, wash bay at the maintenance yard or buildings, as specified herein, at the wattage and at locations as designated by the Engineer.

Materials. The housing shall be one piece and refractor made out of durable polycarbonate to reduce vandalism. The luminaire shall be UL listed for wet locations.

The cover-reflector and socket-reflector junctions shall be sealed against the entry of moisture, dirt and insects with a thick, high density Dacron felt gasket, securely attached by mechanical means, such as a retaining clip, or by a wide-temperature permanent adhesive in a manner acceptable to the Engineer.

A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

The packaging of the luminaires shall incorporate the provisions recommended by the manufacturer to accommodate storage. The submittal shall include these recommendations.

Installation. Manufacturer's recommendations shall be followed during the installation process. The wiring connections shall be made as shown on the drawings and in accordance with the National Electrical Code. The Contractor shall test the luminaires with the lighting controller energized to assure that all the components are working in accordance with their specifications and carrying rated load.

Wall mounted luminaires shall be either attached to structures, such as a wall, as indicated on the plans or as directed by the Engineer.

All mounting hardware shall be corrosion resistant and shall be stainless steel unless otherwise indicated. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Luminaire, fluorescent, shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing a LUMINAIRE, FLUORESCENT, FOR WET LOCATIONS, of the type and wattage indicated by the Engineer, which shall be payment in full for the item as specified herein.

LU05 LUMINAIRE, HPS, FOR BUILDING ROOF

Description. This item shall consist of furnishing and installing, a HPS, luminaire, with lamp and photocell, if specified, for flood lighting or roof mount, as specified herein. All boxes, recommended by the manufacturer for proper storage, shall be included in this item.

Materials. The housing shall be heavy duty, made of die cast aluminum. The luminaire shall meet NEMA specifications, high pressure sodium lamp, of specified wattage and voltage. The shield and other mounting accessories, as specified on the contract drawing, shall be included with the luminaire.

When closed, the optical assembly shall be sealed with a gasket against the entry of moisture, dirt and insects. The cover-reflector and socket-reflector joints shall be sealed against the entry of moisture, dirt and insects with a thick, high density Dacron felt gasket, securely attached by mechanical means, such as a retaining lip, or by a wide-temperature permanent adhesive in a manner acceptable to the Engineer. Submittal information shall include data relative to gasket thickness and density and the means of securing it in place. Any alternative gasket material may be approved by the Engineer. There shall be a provision for thermal breathing. A charcoal filter may be used, subject to approval by the Engineer.

A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

Installation. The installation shall be as indicated on the plans, or as directed by the Engineer. All mounting hardware shall be corrosion resistant and shall be stainless steel unless otherwise indicated. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Luminaire shall be counted each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing a LUMINAIRE, HPS, FOR BUILDING ROOF, of the wattage and operating voltage specified, which shall be payment in full for the item as specified herein.

LU06 LUMINAIRE, HPS, FOR BUILDING WALL

Description. This item shall consist of furnishing and installing, a wall mounted luminaire, with lamp, as specified herein. All boxes, recommended by the manufacturer for proper storage, shall be included in this item.

Materials. The housing shall be of aluminum construction consisting of a single piece extruded main frame and flat sheet back panel. Heavy-duty cast aluminum doorframe shall be hinged and latched by means of a single screw. The optical system shall be adjustable, with "sharp cutoff", reflector optical assembly consisting of a hydroformed, specular Alzak main reflector with both parabolic and cylindrical reflecting surfaces, auxiliary reflecting elements, and a support frame. Optical elements may be rotated to permit adjustment of cutoff over a range from 70 degrees through 86 degrees. The refractor shall be vandal resistant, injection molded, polycarbonate lens, UV stabilized, and complete with special UV inhibiting coating. The luminaire shall be UL listed for wet locations. The mounting accessories, hardware and brackets, shall be stainless steel, unless indicated otherwise.

The cover-reflector and socket-reflector junctions shall be sealed against the entry of moisture, dirt and insects with a thick, high density Dacron felt gasket, securely attached by mechanical means, such as a retaining lip, or by a wide-temperature permanent adhesive in a manner acceptable to the Engineer. It shall be an equivalent or better than the Paracyl luminaire.

A decal, complying with the ANSI standard, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

Luminaire information submitted for approval shall include any recommendations of the manufacturer for storage as provided under this contract.

The wattage and operating voltage as specified on the plan submitted shall be used as part of this pay item.

Installation. Wall mount luminaires shall be either attached to structures, such as a wall, as indicated or implied by the configuration on the plans, or as directed by the Engineer. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Luminaire shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing a LUMINAIRE, HIGH PRESSURE SODIUM, FOR BUILDING WALL, of the wattage and operating voltage specified, which shall be payment in full for the item as specified herein.

LU07 LUMINAIRE, KEEPER

Description. This item shall consist of furnishing, delivering and installing a luminaire keeper of the type and construction, as shown in figure L-22, to secure the luminaire to the mast arm or davit arm in case of a failure of the luminaire mounts.

Materials. The cable used for the luminaire keeper shall be 3.18 mm (0.0125”) stainless steel aircraft cable. The cable shall be secured at both ends, as shown on the drawing.

Method of Measurement. Luminaire keeper, shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing one, LUMINAIRE KEEPER, of the type and construction as specified, which shall be payment in full for the item specified herein.

LU08 LUMINAIRE, NAVIGATION LED

Description. This item shall consist of furnishing and installing a navigation LED light fixture including LED lamp, of the wattage as specified, conduit connection, wiring and all appurtenances mounted on fixed and moveable bridges, piers, abutment walls and dolphins.

Materials. The existing navigation light fixtures currently installed on the Department structures meet U.S. Coast Guard Bridge Lighting Regulations. Refer to Section 822 of the Standard Specifications for Road and Bridge Construction, current version. Replacement fixtures of equipment required under this contract shall:

- Meet current U.S.C.G. regulations.
- Be mounted in the same location and manner as the original units.
- Match the Fresnel lens color and degree spread (either 180 degrees or 360 degrees) as the existing units.
- Be equipped with a shielding device for protection from flying debris and other spurious objects.

The existing equipment was manufactured by Security Products Division of Federal Signal Corporation and identified as follows:

TYPE	DESCRIPTION
Type 1 Pier light	180 Degree red lens, cast aluminum housing
Type 1-A Pier light	180 Degree red lens, cast aluminum housing
Type 1-P Pivot type Channel or Pier light	180 Degree red lens, cast aluminum housing
Type 2 Pivot type Bridge Light	1 Green and 1 Red 180 Degree lenses, cast aluminum housing
Type 6 Channel Marker	360 Degree green or red lens, cast aluminum housing
Type 6 PSU Pivot type Channel light	360 Degree green or red lens, cast aluminum housing
Type 11 Channel light	2-360 Degree green or red lenses, cast aluminum housing

Installation. The Contractor shall provide all equipment, transportation and labor necessary to furnish and install the equipment as specified. New wiring and conduit will be paid under separate contract pay items. The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Furnishing and installing each Navigation LED luminaire, as specified above and approved by the Engineer, shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for LUMINAIRE, NAVIGATION LED, which shall be payment in full for furnishing and installing, specified herein and as directed by the Engineer.

LU09 LUMINAIRE, REMOVAL AND SALVAGE

Description. This item shall consist of disconnecting, completely removing and transporting to the State's storage facility, and unloading as salvage, a luminaire mounted on a wall, roof, or ceiling, in a maintenance yard, sign shop, weigh station, rest areas and other IDOT facilities, light pole, light tower, underpass, tunnel sign structure or navigation light fixture as specified herein. This pay item shall also include removal of the associated conduit, wire, disconnect switch and junction boxes. Proper documentation of the State's salvage is required with this pay item.

General. Luminaire removal shall be in accordance with Section 841 of the Standard Specifications for Road and Bridge Construction, current version.

Prior to the removal of any equipment, the Contractor shall arrange an inventory inspection with the Engineer. All equipment shall be inspected and logged as to type, size and condition. No removal work shall be permitted until approved by the Engineer.

Unless otherwise indicated, luminaires shall be removed, boxed in containers approved by the Engineer and delivered and unloaded at the storage facility of the State, or as designated by the Engineer.

Any damage resulting from the removal and/or transportation of the luminaire shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the Engineer.

Existing anchors for underpass or tunnel lighting fixture which have been attached improperly shall be left in place as removal would cause more damage to the beam than leaving the anchors in place.

Method of Measurement. Each luminaire, which is removed, boxed as approved, delivered to storage, unloaded, inspected, and documented properly, shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the contract unit price each for LUMINAIRE, REMOVAL AND SALVAGE, which shall be payment in full for the luminaire location as specified herein.

LU10 LUMINAIRE SHIELD, POLE

Description. This item shall consist of furnishing, delivering and installing a luminaire shield, for highway luminaires on light poles at locations, as directed by the Engineer, to minimize off-highway light infringement.

Materials. The luminaire shields shall be GE Lighting Systems Model ELSHS-M4AC, off-highway side luminaire shield, or approved equal. Highway side shields shall not be used.

Method of Measurement. Luminaire shield, pole, shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing one, LUMINAIRE SHIELD, POLE, of the type and construction as specified, which shall be payment in full for the item specified herein.

LU11 LUMINAIRE SHIELD, TOWER

Description. This item shall consist of furnishing, delivering and installing a luminaire shield, for highway luminaires on light towers, at locations, as directed by the Engineer, to minimize off-highway light infringement.

Materials. The luminaire shields shall be 15" high, curved shield, GE Lighting Systems Model ELS-HMAA060, off-highway side luminaire shield, or approved equal. Highway side shields shall not be used.

Method of Measurement. Luminaire shield, tower, shall be counted, each, furnished and installed.

Basis of Payment. This item shall be paid at the contract unit price each for furnishing and installing one, LUMINAIRE SHIELD, TOWER, of the type and construction as specified, which shall be payment in full for the item specified herein.

LU12 LUMINAIRE, TOWER, INSTALL ONLY

Description. This item shall consist of retrieving from State's storage facility, loading, transporting and installing a luminaire on a light tower, complete with new lamp, of the wattage as specified by the Engineer, and all required hardware as specified herein. The luminaire and new lamp shall be paid separately.

Installation. Installation shall be as described in Section 821.05 of the Standard Specifications for Road and Bridge Construction, current version and with the Special Provisions, attached at the end of the luminaire pay items.

Method of Measurement. Luminaires shall be counted each, installed.

Basis of Payment. This item will be paid at the contract unit price each for LUMINAIRE, TOWER, INSTALL ONLY, which shall be payment in full for the complete installation as specified herein.

LU13 LUMINAIRE, FLUORESCENT, INSTALL ONLY

Description. This item shall consist of retrieving from State's storage facility, loading, transporting, installing, connecting, and adjusting ready for operation, as specified herein and as shown on the plans.

Installation. The installation shall conform to Article 821.07 of the Standard Specifications for Road and Bridge Construction, current version. The Contractor shall provide all equipment, transportation and labor necessary to install the equipment as specified. All wiring, terminal blocks, and ballast shall be fully enclosed within the fixture so that none of the above parts are exposed when relamping. The mounting hardware, including the U-channel, fuse, and new lamps as specified are incidental to this pay item.

The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Installing each luminaire, complete in place, with integral ballast and lamps as specified and as shown on the plans, as provided for installing as stated above, and approved by the Engineer, shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for LUMINAIRE, FLUORESCENT, INSTALL ONLY, complete in place, which shall be payment in full for the work as described herein.

LU14 LUMINAIRE, WALL, UNDERPASS OR TUNNEL, INSTALL ONLY

Description. This item shall consist of retrieving from Owner's storage facility, loading, transporting, and installing a wall, underpass or tunnel luminaire, complete with new lamp, of wattage as specified by the Engineer, and all required hardware, as specified herein.

Installation. Installation shall be as described in Section 821.06 of the Standard Specifications for Road and Bridge Construction, current version and with the Special Provisions, attached at the end of the luminaire pay items.

The mounting hardware, junction box, fuse, new lamp as specified and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Unless otherwise indicated, attachment of underpass lighting appurtenances, including the placement of associated anchors, but not limited to underpass luminaires, identification brackets and conduit shall not be attached and/or drilled into precast, prestressed concrete beams. However, existing anchors, which have been installed improperly, shall be left in place, as removal may cause more damage to the beam than leaving it in place.

Method of Measurement. Luminaire shall be counted each, installed.

Basis of Payment. This item will be paid at the contract unit price each for LUMINAIRE, WALL, UNDERPASS OR TUNNEL, INSTALL ONLY, which shall be payment in full for the complete installation as specified herein.

LU15 EMERGENCY/EXIT LIGHT FIXTURE

Description. Furnish and install one emergency/exit light fixture at the Maintenance Yards, Sign Shops, and other Department facilities in District 1, as directed by the Engineer. The fixture shall be a 2-lamp, 120 V, with a minimum two hour battery back up, totally enclosed industrial type fixture. Installation shall include all hardware, hangers, junction box, fuse, lamp as specified and other appurtenances. Removal of the existing fixture, if necessary, shall be included in this work. Conduit and wire installation shall be paid through other pay items, where needed.

Method of Measurement. Furnishing and installing, removing old fixture if necessary, as specified above and approved by the Engineer, shall be counted as a unit of payment.

Basis of Payment. This work shall be paid at the contract unit price each for EMERGENCY/EXIT LIGHT FIXTURE, which shall be payment in full for furnishing, delivering storing, installing and connecting the fixture, complete.

LU16 LUMINAIRE, METAL HALIDE

Description. This item shall consist of removing the old fixture and furnishing and installing, a Metal Halide light fixture of the wattage specified, conduit connection wiring, and all appurtenances, mounted on location as specified by the Engineer, in facilities in District 1.

Materials. Materials shall be in accordance with Section 1067 of the Standard Specification for Road and Bridge Construction, current version, and with the Special Provisions, attached at the end of the luminaire pay items.

The wattage and operating voltage as specified on the plan submitted shall be used as part of this pay item.

Installation. The Contractor shall provide all equipment, transportation and labor necessary to furnish and install the Metal Halide light fixture as specified. New wiring and conduit up to 20' shall be included under this contract pay item, and will not be paid separately.

The mounting hardware, junction box and other appurtenances required are included as part of this pay item except the cable and conduit shall be paid under separate pay item.

Method of Measurement. Removing an old fixture, furnishing and installing each Metal Halide Light Fixture, as specified above and approved by the Engineer, shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for LUMINAIRE, METAL HALIDE, which shall be payment in full for the work, specified herein and as directed by the Engineer.

SPECIAL PROVISIONS FOR LUMINAIRES

These special provisions apply to the preceding luminaire pay items.

Revise the second paragraph, Article 1067.01(c) of the Standard Specifications:

"The reflector, the refractor or lens, and the entire optical assembly shall not develop any discoloration over the normal life span of the luminaire. An extended warranty over and above the normal warranty, shall be furnished by the manufacturer pertaining to the above said discoloration. The extended warranty shall be furnished in writing guaranteeing replacement, including cost of labor and shipment, free of charge to this contract and to the Owner, of any optical assembly, or any component parts thereof, which, as determined by

the Engineer, would develop the aforesaid discoloration. The extended warranty shall accompany submittal information.”

Add the following to Article 1067.01(e). of the Standard Specifications:

“The ballast shall be a high power factor, low-loss, auto regulator type ballast.”

Delete Article 1067.01(e)(1) High Pressure Sodium Reactor ballast of the Standard Specifications

Revise Article 1067.01(e)(1) of the Standard Specifications to read:

“High Pressure Sodium Regulator. That ballast shall be a high power factor, constant wattage auto-regulator, lead type (CWA). The ballast shall be designed to furnish proper electrical characteristics for starting and operating a high pressure sodium vapor lamp of the specified rating at ambient temperatures of -29 degrees to +40 degrees C. The ballast windings shall be adequately impregnated and treated for protection against the entrance of moisture, insulated with Class H insulation, and able to withstand the NEMA standard dielectric test. The ballast shall include an electronic starting assembly.

The starting assembly shall be comprised of solid state devices capable of withstanding ambient temperatures of 85 degrees C. The starter shall provide timed pulsing with sufficient follow-through current to completely ionize and start all lamps. Minimum amplitude of the pulse shall be 2,500 volts, with a width of one (1) microsecond at 2,250 volts, and shall be applied within 20 electrical degrees of the peak of the open circuit voltage wave with a repetition rate as required by the lamp in accordance with ANSI for the 60 cycle wave. The lamp peak pulse current shall be a minimum of 0.2 amperes. Proper ignition shall be provided over a range of input voltage from 216 to 264 volts. The starter component shall be field replaceable and completely interchangeable with no adjustment necessary for proper operation. The starter component shall have push-on type electrical terminations to provide good electrical and mechanical integrity and ease of replacement. Terminal configuration shall preclude improper insertion of plug-in components. The starter circuit board shall be treated in an approved manner to provide a water and contaminant-resistant coating.

The ballast shall have an overall power factor of at least 0.9 when operated under rated lamp load. The ballast shall withstand a 2,500 volt dielectric test between the core and windings without damage to the insulation. The ballast shall not subject the lamp to a crest factor exceeding 1.8 and shall operate the lamp without affecting adversely the lamp life and performance.

The ballast shall be designed to ANSI Standards and shall be designed and rated for operation on a nominal 240 volt system. The ballast shall provide positive lamp ignition at the input voltage of 216 volts. It shall operate the lamp over a range of input voltages from 216 to 264 volts without damage to the ballast. It shall provide lamp operation within ANSI lamp specifications for rated lamp life at input design voltage range. All measurements shall be taken using a seasoned reference lamp conforming to ANSI test procedures. The reference lamp wattage shall not vary more that +/- 2% from the nominal wattage rating of the reference lamp.

Operating characteristics shall produce output regulation not exceeding the following values:

Nominal Wattage	Ballast	Maximum Regulation	Ballast
750		25%	
400		25%	
310		26%	

250	22%
150	22%

For this measure, regulation shall be defined as the following:

$$\text{Percentage Ballast Regulation} = \frac{W_{LampH} - W_{lampL}}{W_{lampN}} \times 100$$

where: W_{LampH} = lamp watts at +10% line voltage (264v)
 W_{LampL} = lamp watts at - 10% line voltage (216v)
 W_{lampN} = lamp watts at line voltage (240v)

Ballast losses, based on cold bench tests, shall not exceed the following values:

Nominal Wattage	Ballast	Maximum Ballast Losses
750		16.0%
400		16.0%
310		19.0%
250		17.5%
150		26.0%

Ballast losses shall be calculated based on input watts and lamp watts at nominal system voltage as indicated in the following equation:

$$\text{Percentage Ballast Losses} = \frac{W_{line} - W_{lamp}}{W_{lamp}} \times 100$$

where: W_{line} = line watts at 240v
 W_{lamp} = lamp watts at 240v

Revise the eighth paragraph of Article 1067.01 of the Standard Specifications to read:

“The testing performed shall include photometric and electrical testing. Photometric testing shall be in accordance with IES recommendations, in addition that the selected luminaire(s) shall be tested as manufactured without any disassembly or modification and, as a minimum shall yield an isofootcandle chart, with maximum candela point and half candela trace indicated, an isocandela diagram, maximum plane and cone plots of candela, a candlepower table (house and street side), a coefficient of utilization chart, a luminous flux distribution table, and complete calculations based on specified requirements and test results.”

Add the following to Article 1067.02(a)(1) of the Standard Specifications:

“The luminaire shall slip-fit on a two inch pipe arm, and shall have a barrier to limit the amount of insertion. The mounting clamp shall be concealed in the housing and provide a +5 degree vertical leveling adjustment. The slip-fit pipe entry shall be made by means of a flange internal to the cylinder and a round guide tube or other approved means which will provide a seal of the housing and minimum disruption of a smooth outside surface of the luminaire which will be compatible with the mounting arm.”

Add the following table(s) to Article 1067.01 of the Standard Specifications:

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	m (ft)
	Number of Lanes	
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	m (ft)
	Mast Arm Length	m (ft)
	Pole Set-Back From Edge of Pavement	m (ft)
LUMINAIRE DATA	Lamp Type	HPS
	Lamp Lumens	
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control Of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type I
	Total Light Loss Factor	
LAYOUT DATA	Spacing	m (ft)
	Configuration	Single Sided
	Luminaire Overhang over edge of pavement	m (ft)

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
---------------------------------	--	--

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

ILLUMINATION	Average Horizontal Illumination, E_{AVE}	Lux
	Uniformity Ratio, E_{AVE}/E_{MIN}	
LUMINANCE	Average Luminance, L_{AVE}	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	
	Uniformity Ratio, L_{MAX}/L_{MIN}	
	Max. Veiling Luminance Ratio, L_V/L_{AVE}	

LW01 WASH HUBBARD'S CAVE TUNNEL WALLS

Description. The tiled tunnel walls at highway lighting locations L0883, (Hubbard's cave) shall be steam washed per paint and grout manufacturers' recommended pressure and temperature. Both I/B and O/B sides shall be washed to remove dirt, dust or other foreign material. The Contractor shall inspect locations prior to bidding this item.

Hubbard's cave approximate dimensions

Maximum Height: 14'
Length (4 sides): 741', each side
Tile manufacturer: Buchtal
Grout: Epoxy coated latex modified according to ANSI Standard A118.6.

General. Protect all surrounding painted surfaces and foliage to avoid damage from contact with washing solutions. Avoid wind drift onto passersby, vehicles or adjacent properties. Protect and/or divert pedestrian and auto traffic from the work area. Use a soft bristled brush or broom for washing, and rinse with sponge and water. Pressure water rinsing may improve cleaning results, but is not required.

Materials. The detergent, used for the April washing, shall be Riptide (DL 2630), made by Drummond American, or equal. The Contractor shall follow all manufacturer instructions for application and use of the product.

The technical data is as follows:

Appearance:	Clear liquid	Specific Gravity:	0.991
Color:	Orange	Solubility in Water:	complete
Odor	Orange/citrus	Biodegradable:	100%
Flash Point:	130 degrees F.		

Test each type of surface before overall application to ensure suitability and desired results. Apply test areas according to the manufacturer's recommendations.

Method of Measurement. Tiled tunnel walls, each installation, washed.

Basis of Payment. This item shall be paid at the contract unit price, each, for WASH HUBBARD'S CAVE TILED TUNNEL WALLS, WASH, as specified which shall be payment in full for all work specified herein.

PUMP STATION SYSTEM – NON ROUTINE PAY ITEMS:

PA01 ALARM, INTRUSION OVERRIDE KEY SWITCH

Description. This item shall consist of furnishing, installing and interfacing an intrusion override key switch to the SCADA panel and existing intrusion alarm system as specified herein and indicated by the Engineer into an existing pumping station.

Materials. The pumping station existing intrusion override key switch shall be replaced with a new intrusion override key switch that provides a contact closure to the SCADA panel and a contact closure to the existing intrusion alarm system when the intrusion alarm system is armed. Only the "barrel" of the existing override key assembly shall be replaced. The override key switch shall be from Chicago Lock Corporation, Ace II switch lock type with the key being compatible to the existing IDOT standard. The Contractor shall be responsible for coordinating IDOT authorization for the lock revisions.

All equipment furnished and installed under this item shall be appropriately identified with nameplates as specified under Basic Materials and Methods, elsewhere herein.

Installation. All intrusion override switches shall be mounted as indicated or directed by the Engineer, anchored as required and in conformance with the applicable specifications for Basic Materials and Methods, elsewhere herein.

Method of Measurement. Each intrusion override key switch as furnished, installed and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the Contract unit price each for ALARM, INTRUSION OVERRIDE KEY SWITCH which shall be payment in full for the work as described herein.

PC02 COATING, CONCRETE SURFACE

Description. This item shall consist of furnishing and applying paint coating to exterior and interior concrete surfaces and all attached conduits and fittings as specified herein.

Materials. The concrete and conduit surface will receive one coat of polyamide epoxy primer 2.5 to 6 MILS DFT (Dry Film Thickness) and one coat of urethane enamel 2 to 4 MILS DFT. Unless the moisture content is above 3 LB/SF use a acrylic latex paint 2-4 MILS DFT with an approved primer 1/1/2 – 2/1/2 MILS DFT.

Application. The concrete surfaces shall be prepared to SSPC SP-2 hand tool clean or SSPC SP-3 power tool clean to remove any peeled or failed coatings. A solvent cleaning and scraping necessary to remove dirt, grease and peeling paint shall be used to prepare the floor. A moisture content test shall be performed and results provided to the IDOT Engineer. All conduits, fittings, boxes and switches attached and or within one foot of the concrete surfaces shall be cleaned properly and painted. The contractor may have to apply multiple coats to obtain manufacturer's recommended thickness.

Method of Measurement. A square foot of coating applied to a pump station in accordance with manufacturer's specifications, and clean up of work site, as approved by the Engineer, shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price in square feet, for COATING, CONCRETE SURFACE, which shall be payment in full for the work described herein.

PC03 COATING, STEEL SURFACE

Description. This item shall consist of furnishing, cleaning and applying a primer and final paint coating to steel surfaces as specified herein.

Materials. The coating shall be a tri-polar oil-alkyd primer 2-4 MILS DFT (Dry Film Thickness) and one finish coat of 20%-30% Copolymerized polysilicone enamel 1½ - 2 ½ MILS DFT. Steel located in dry pit or wet pits, where high humidity is present use Aluminum aromatic moisture cured urethane.

Application. The steel shall be prepared to SSPC SP-2 hand tool clean or SSPC SP-3 power tool clean to remove any rust, peeled or failed coatings.

Method of Measurement. A square foot of primer with final coating applied to a surface shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price in square feet, for COATING, STEEL SURFACE, which shall be payment in full for the work described herein.

PD01 DETECTION SYSTEM, FIRE

Description. This work shall consist of furnishing labor, equipment and material to install a wall mounted fire alarm panel, and associated devices as specified herein and indicated by the Engineer.

Materials. Furnish a four zone fire alarm panel, class B/A with three photoelectric smoke detector with thermal, and two 12Volt @ 7 A.H. Gel battery.

Work Description. The contractor shall Install, commission, and perform testing on the fire alarm panel and associated devices. Commissioning shall be done by a qualified Fire Alarm Service Representative. The representative shall identify the location of the smoke and head detectors prior to installation. The output signal shall be connected to the SCADA and Aegis system. All conduit and wire necessary for complete installation in the pump station shall be paid under their respective pay items for conduit and wire. Submit all catalog cuts, shop drawings and pump station layout showing location of all devices for IDOT approval.

All equipment furnished, installed or mounted for this pay item shall conform to the applicable specifications for Basic Materials and Methods, elsewhere herein. The Contractor shall provide all submittals as specified above in this pay item including catalog cuts, design drawings and product data sheets for the Engineers approval prior to installation. Three complete sets of record drawings, catalog cuts and O&M manuals shall be provided upon completion for Engineers approval

Method of Measurement. Each Detection System, Fire, that is inspected, tested, and certified shall be counted as a unit for payment.

Basis of Payment. This work will be paid at the contract unit price, each, for DETECTION SYSTEM, FIRE, which will be payment in full for the work described herein.

PG01 GAS SENSOR, REMOVE AND REPLACE

Description. This item shall consist of the removal, Installation, calibration and function test of a new gas sensor by a factory trained sales and Service Company. The transmitter and controller shall remain in place and functional with only the gas sensor being replaced.

Locations. The list of pump stations with their corresponding gas detector system manufacturer, number of sensors and their respective locations is listed under pay item PGS1.

Materials. The furnished gas sensor shall be equivalent or superior in quality to the existing gas sensor and be rated and approved for its intended use by the national FM and CSA standards. The furnished gas sensor shall have the same sensing element as the existing SCOTT, MSA or Rexnord gas sensors to be replaced.

Work Description. The factory trained sales and Service Company, such as Automatic Suppression Systems Inc., or Engineer approved equivalent shall execute this work in conjunction with Pay Item PG6 Gas Detector System Inspection. The removal and reinstallation of the sensor shall comply with manufacturer specifications.

Method of Measurements. Each gas sensor that is furnished, installed, calibrated, tested and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for GAS SENSOR, REMOVE AND REPLACE, which shall be payment in full for the work described herein.

PI01 INSPECTION, AUTOMATIC BUS TRANSFER SYSTEM

Description. The contractor shall supply a factory trained field service technician to perform preventive maintenance testing and inspection of the automatic bus transfer scheme at PS #22, 23, 26,35. A service sheet shall be filled out listing both the "as found" and "as left" condition of the system. Equipment for the preventive maintenance, testing and inspection, include Main-Tie-Main transfer scheme, with associated circuit breakers, controls and devices.

Scope of Work.

1. Physical inspection will include:
 - Overall enclosure inspection for structural integrity
 - Verification of proper door swing, hinge operation, latching and door interlocking
2. Insure proper operation of:
 - Pilot devices such as selector switches and pushbutton
 - Control and timing relays
 - Protective devices
 - Auxiliary electrical contacts
 - Circuit breakers and switches
 - Operating mechanisms and interlocks
 - Other safety interlocks and mechanisms
 - Review of all power cable terminations for tightness. Conductor fraying and clearances
3. Electrical inspection will include:
 - Inspection of control wiring terminations
 - Pull apart terminal blocks engagement
 - Wiring conformance to factory schematics
 - Compare instrument transformer ratios to meter scales
 - Electrical operation of all components
 - Main, tie, and main circuit breaker inspection and
 - Testing in accordance with air circuit breaker test report, P-7.
4. Installation conformance to specifications:
 - Ensure physical arrangement conforms to factory drawings
 - Ensure supplied features and options conform to factory drawings
 - Ensure all wiring conforms to factory specifications
 - Adherence to State and local codes
5. Record of inspection and test results will be kept. A check-off list will be used; detailing work performed and results obtained. The formal report produced will list equipment as found, technical

service/assistance rendered final equipment settings and recommendations. A report copy shall be submitted.

This pay item includes simulating a power failure to see if the Automatic Transfer System main tie main will properly switch over and switch back to normal upon power restoration. The breakers shall be inspected to look for signs of arcing or pitting of the arcing contacts, and for uneven or premature wearing of the main contacts. All timing circuits will be tested and all connections will be checked for tightness.

The Electrical Maintenance Contractor shall be responsible for operation of the overall system and application. It is expected that the Contractor will have qualified personnel available with the necessary knowledge and authority regarding performance of the overall system and application so that the controller may be adjusted for optimum performance.

Method of Measurement. Each Service Automatic Bus Transfer System of each Pump Station as approved by IDOT Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for INSPECTION, AUTOMATIC BUS TRANSFER SYSTEM, which shall be payment in full for the work described herein.

PI02 INSPECTION, AUTO TRANSFER SWITCH

Description. The Contractor shall provide a factory trained service representative and shall use factory authorized testing equipment for all testing procedures to complete a comprehensive transfer switch inspection. The inspection, testing and maintenance shall be as recommended by the Manufacturer.

Scope of Work. The Inspection shall consist of the following work:

1. Verify that all cabled connections are on the proper terminals and torque to the proper specifications
2. Inspect unit for debris and clean
3. Check and adjust all voltage and current sensors as necessary
4. Check phase rotation of both sources
5. Check all auxiliary contacts and accessories are connected properly and adjust to the proper specifications
6. Inspect main contacts
7. Check integrity of electrical hardware of control panel
8. Perform milli-volt drop test
9. Test all light bulbs and replace if necessary
10. Inspect all mechanical interlocks
11. Inspect all electrical interlocks
12. Lubricate necessary moving parts
13. Inspect all limit switches
14. Coordinate with Generator Inspection load test for generator output and timer settings and verify with, specifications
15. Exercise timer operation and control.
16. Test unit and insure proper operation of all components

A report shall be submitted that includes the following:

1. Recorded values of all measurements taken such as voltage, amperage, frequency, milli-volt, etc.
2. Any adjustments made will be noted
3. Recommendations relative to repairs or upgrades
4. Note all options or features
5. Note the following per manufacturer recommendations:
 - "How to bypass unit"
 - "How to test unit"
 - "How to set times"

A record of inspection and test results will be kept. A check off list will be used detailing work performed and results obtained. The formal report produced will list equipment as found and final equipment settings and recommendations. The Contractor shall be responsible for operation of the overall system and application. It is expected that the Contractor will have qualified personnel available with the necessary knowledge and authority regarding performance of the overall system and applications so that the controller may be adjusted for optimum performance.

Method of Measurement. Each, for the Auto Transfer Switch Inspection of each pump station as approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price, each for INSPECTION, AUTO TRANSFER SWITCH, which shall be payment in full for the work described herein.

PI03 INSPECTION, GAS DETECTOR SYSTEM

Description. This item consists of furnishing a manufacturer approved factory-trained sales and Service Company to test and calibrate a gas detector system as specified herein for a pumping station.

Locations. The following is a list of pump stations with their corresponding gas detector system manufacturer, number of sensors and their respective locations.

PS 2	MSA 5100 with 2 sensors
PS 3	MSA 5100 with 2 sensors
PS 4	
PS 5	MSA 5300 with 6 sensors
PS 7	
PS 8	
PS 9	MSA 5100 with 2 sensors
PS 10	MSA 5300 with 2 sensors
PS 11	MSA 5100 with 2 sensors
PS 12	MSA 5100 with 2 sensors
PS 13	
PS 14	
PS 15	MSA 5100 with 2 sensors
PS 16	MSA 5100 with 2 sensors
PS 17	MSA 5300 with 2 sensors
PS 18	MSA 5100 with 2 sensors
PS 19	MSA 5100 with 2 sensors
PS 20	Rexnord System with 2 sensors
PS 21	Scott Quadraplex with 6 sensors
PS 22	Detronics 2000 with 6 sensors
PS 23	Detronics 2000 with 6 sensors
PS 24	MSA 5100 with 2 sensors
PS 25	MSA 5100 with 2 sensors
PS 26	MSA 5100 with 2 sensors

PS 27	MSA 5100 with 2 sensors
PS 28	MSA ULT System with 5 sensors
PS 29	
PS 30	MSA ULT System with 5 sensors
PS 31	MSA 5100 with 1 sensor
PS 32	
PS 33	
PS 34	MSA 5100 with 2 sensors
PS 34	
PS 36	
PS 37	
PS 38	
PS 39	Scott Quadraplex with 2 sensors
PS 40	
PS 41	MSA 5100 with 2 sensors
PS 42	
PS 43	MSA 5100 with 2 sensors
PS 44	MSA 5100 with 2 sensors
PS 46	MSA 5100 with 2 sensors
PS 47	MSA 5100 with 1 sensor
PS 48	
PS 50	
PS 51	MSA 5100 with 2 sensors
PS 52	MSA 5100 with 2 sensors

Work Description. The factory trained sales and Service Company shall furnish all tools and test equipment to complete the work as specified herein. The service company personnel shall be OSHA certified and equipped with proper safety equipment to enter areas where hazardous gases might be present. The Contractor shall provide access to the pumping station for the Service Company and assistance in reaching any difficult locations within the pumping station.

The Service Company shall complete the following procedures.

- 1) Clean all detectors and hydrophobic filters.
- 2) Check calibration of all detectors and adjust each, if required
- 3) Replace sensing element if calibration can no longer be properly performed. This work shall be completed at the time of testing but will be paid under separate contract unit price specified elsewhere herein.
- 4) Actual alarms of the detectors and sensors to ensure reliability.
- 5) Check gas detector internal and power supply wiring for grounds and shorts.
- 6) Check AEGIS and SCADA system for alarm acknowledgment.
- 7) Check all fans and dampers for start-up and/or shut down.

Report. A written report shall be submitted to the Engineer, which shall contain any pertinent recommendations for the system.

Method of Measurement. Each detector system that is tested, calibrated and has its accompanying report submitted and approved by the Engineer shall count as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for INSPECTION, GAS DETECTOR SYSTEM, which shall be payment in full for the work described herein.

PI04 INSPECTION, SWITCHGEAR SYSTEM

Description. This item shall consist of furnishing of services and equipment to inspect the 600-Volt class switchgear, including the circuit breakers, bus, structure, instrument transformers and other devices, at a pump station. The services shall be provided by a factory trained field service technician.

Scope of Work. Preventative maintenance testing and inspection shall be performed according to the following inspection and test procedures.

Switchgear and Switchboard Assemblies:

1. Visual and Mechanical Inspection
 - Inspect the assemblies for physical damage
 - Inspect bussing compartment. Check tightness of accessible bolted bus joints by torque wrench method. Check insulators for cracks and contamination.
 - Verify all electrical, Key, and mechanical interlock systems for correct operation
 - Make closure attempt on locked open devices. Make opening/withdrawal attempt on locked closed devices
 - Check mechanical operations of circuit breaker in cell and activate auxiliary devices
 - Check ease of operation, proper grounding and interlock
 - Inspect circuit breaker for contamination, physical damage
 - Verify all LED's are working when the system is operating
2. Electrical Tests
 - Insulation resistance of each bus section is measured phase to phase and phase to ground
 - Electrical operation of the circuit breaker is checked in the test and connected position
 - The control power source is checked
 - The circuit breaker control scheme is tested

- A phasing check is made on double-ended and/or emergency source switchgear at tie points to ensure correct bus phasing.

Circuit Breakers:

1. Visual and Mechanical Inspection

- Check mechanical operation
- Cell fit and element alignment are checked
- Check bolt torque levels are in accordance with manufacturers or U.S. Standards specifications
- Check arc chutes for foreign matter, cracks and secure Installation
- Clean primary contact surfaces and lubricate if required

2. Electrical Tests

- Measure contact resistance
- Check Insulation resistance at 1000 volts D.C. for one (1) minute from pole to pole and from each pole to ground and across open contacts for each phase.
- Determine minimum long-time pick-up current and delay time at 300% of pick-up by secondary injection
- Determine short-time pick-up and time delay by secondary injection
- Determine instantaneous pick-up current by secondary injection
- Determine ground fault pick-up current and time delay by secondary injection
- Trip unit reset characteristics are verified
- Final settings are made in accordance with Engineer's prescribed settings.
- Auxiliary devices, such as under voltage relays, blown main fuses detector, shunt close, shunt trip, spring charging motor and auxiliary contacts are activated to ensure operation as applicable
- All functions of the trip units shall be tested with test kits

Metering and instrumentation:

- Verify meter connections in accordance with single line meter and relay diagram
- Inspect for physical damage
- Electrical tests
- Ammeter accuracy is checked using current injection.
- Voltmeter accuracy is checked

SY/MAX 50PLC:

- Visual and mechanical inspection
- Inspect programmable controller Installation for physical damage
- Inspect for proper grounding
- Check for power wiring
- Check all terminal wiring
- Check all I/O wiring
- Check LI/RI wiring
- Verify correct switch settings on all modules
- Electrical tests
- Inspect sequence of operation
- Verify power supply voltages
- Verify operation of selected I/Os
- Verify resistance of LI/RI cable
- Verify input voltages
- Verify resistance of system ground

Record of inspection and test results will be kept. A check-off list will be used, detailing work performed and results obtained. The formal report produced will list equipment as found, technical service/assistance rendered final equipment settings and recommendations. A report copy shall be submitted to IDOT engineer.

Method of Measurement. Lump sum for Switchgear System Inspection approved by IDOT Engineer for the pump station shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contact unit price lump sum for INSPECTION, SWITCHGEAR SYSTEM, which shall be payment in full for the work described herein.

PI05 INSPECTION, MOTOR STARTER, SOFT START TYPE

Description. The contractor shall supply a factory trained field service technician to perform preventive maintenance testing and inspection of the soft start type motor starter at PS #22. A service sheet for each starter shall be filled out listing both the “as found” and “as left” condition of the starters. All starters shall be inspected and tested under this pay item. Equipment included in the preventive maintenance, testing and inspection five (5) Soft start buckets with associated controls including devices associated with the transfer scheme.

Scope of Work.

1. Physical inspection will include:
 - Overall enclosure inspection for structural integrity
 - Verification of proper door swing, hinge operation, latching and door interlocking
2. Insure proper operation of:
 - Pilot devices such as selector switches and pushbuttons
 - Soft starters
 - Control and timing relays
 - Overload and protective devices
 - Auxiliary electrical contacts
 - Circuit breakers and switches
 - Operating mechanisms and interlocks
 - Other safety interlocks and mechanisms
 - Review of all power cable terminations for tightness. Conductor traying and clearances
3. Electrical inspection will include:
 - Inspection of control wiring terminations
 - Pull apart terminal blocks engagement
 - Wiring conformance to factory schematics
 - Compare instrument transformer ratios to meter scales
 - Electrical operation of all components
4. Installation conformance to specifications:
 - Ensure physical arrangement conforms to factory drawings
 - Ensure supplied features and options conform to factory drawings
 - Ensure all wiring conforms to factory specifications
 - Adherence to State and local codes
5. Record of inspection and test results will be kept. A check-off list will be used, detailing work performed and results obtained. The formal report produced will list equipment as found, technical service/assistance rendered final equipment settings and recommendations. A report copy shall be submitted.
6. Servicing the Motor Soft starters includes final controller adjustments to ensure maximum performance, efficiency and conformance to system limitations. Adjustments include current limit, current trip, minimum and maximum voltage, and controller stability settings as described in the instructions manual. If the adjustable voltage ramp option is provided, initial torque, and ramp times settings are adjusted. Operational features, such as jam/underload, extended start time and smooth stop, are checked and adjusted. The current calibration switch is checked for proper settings.

The Electrical Maintenance Contractor shall be responsible for operation of the overall system and application. It is expected that the Contractor will have qualified personnel available with the necessary knowledge and authority regarding performance of the overall system and application so that the controller may be adjusted for optimum performance.

Method of Measurement. Each for Servicing a Motor Starter, Soft Start Type, Inspection as approved by IDOT Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price, each for INSPECTION, MOTOR STARTER, SOFT START TYPE, which shall be payment in full for the work described herein.

PI06 INSPECTION, SCADA RADIO EQUIPMENT

Description. This item shall consist of the Contractor providing a manufacturer approved factory sales and service company to inspect the IDOT SCADA radio system as described herein for the Hillside repeater, Central and Satellite radio as described herein.

Equipment. All radios, antennas, antenna line and connectors, surge suppressor, power supplies, batteries and all appurtenances for the site specific radio system for each location.

Materials. The factory sales and Service Company shall provide all necessary tools and manufacturer's test sets to complete this work.

Work Description. The Contractor shall assist the factory sales and Service Company, if required, to complete this inspection.

The factory Service Company's inspection shall include but not be limited to the following items:

Verification of transmit frequency, transmit power, voltage standing wave ratio (VSWR), transmit deviation, receive frequency, receiver sensitivity, receive audio with signal, receive audio without signal, forward/reflected power ratio levels, a printed time domain reflectometer (TDR) line trace and the antenna signal. All values for the above items shall be corrected, if required.

Test for 1/2 hour battery back-up power and replace battery, if required.

Reporting. The Service Company shall submit a report consisting of all data values for items stated above, the methods/means used to test and record the data values and the previous data values recorded during the last inspection (for comparison purposes). The report shall also include any pertinent changes made or required to the system.

Method of Measurement. The total inspection as provided for the Hillside repeater, Central and Satellite radios system including accompanying report and approval of the Engineer shall be counted as a lump sum unit for payment.

Basis of Payment. This work shall be paid at the contract unit price lump sum for INSPECTION, SCADA RADIO EQUIPMENT, which shall be payment in full for the work described herein.

PI07 INSPECTION, SCADA RADIO

Description. This item shall consist of the Contractor furnishing a manufacturer approved factory sales and service company to inspect the SCADA radio system for a designated pump station as described herein.

Equipment. All radios, antennas, antenna line, and connectors, surge suppressers, power supplies, batteries and all appurtenances for the site specific radio system for each location.

Materials. The factory sales and Service Company shall provide all tools and manufacturer's test sets to complete all work specified herein.

Work Description.

The factory sales and Service Company shall complete the following list of items.

1. Inspect and correct radio AFC and CTS operating parameters.
2. Check frequency, soft carrier delay, time-out timer length and status of squelch tail eliminator.
3. Check real forward RF power, VCO lock voltage, transmit power output, received signal strength, supply voltage of radio, regulator voltage and VSWR at antenna connector.
4. Check receiver sensitivity, forward/reflected power ratio levels and correct any deviation.
5. Check status of battery, power supply and diagnostics board and replace, if necessary.

Print a time domain reflectometer (TDR) line trace and submit with report

Reporting. The factory sales and service company shall submit a report consisting of data for all items stated above, the methods/means used to test and record consisting of all data values recorded during the last inspection (for comparison purposes). The report shall also include any pertinent changes made or required to the system.

Method of Measurement. Each inspection of pump station SCADA radio equipment including submittal of its report and approval by the Engineer shall count as a unit for payment.

Basis of Payment. This work shall be paid at the contact unit price each for INSPECTION, PUMP STATION SCADA RADIO, which shall be payment in full for the work, described herein.

PI08 INSPECTION, BACKFLOW PREVENTER

Description. This work shall consist of inspecting, and testing the backflow preventer as specified at Pump Station 10, 17, 23, 31, 39, 44, 46, and 52.

Work Description. Inspection, testing, and certification of the backflow preventer shall be performed in accordance with: State of Illinois, Rules and Regulations; Title 35: Environmental Protection; Subtitle F: Public Water Supplies; Chapter II: Environmental Protection Agency; Part 653: Design, Operation and Maintenance Criteria; Subpart H: Cross-Connections. After the inspection and testing are complete, records of the test shall be submitted to the local community public works department and the Engineer. In addition, the Contractor shall provide the Engineer with documentation of the receipt of the test records by the local community public works department.

Method of Measurement. Each backflow preventer device that is inspected, tested, and certified shall be counted as a unit for payment.

Basis of Payment. This work will be paid at the contract unit price, each, for INSPECTION, BACKFLOW PREVENTER, which will be payment in full for the work described herein.

PM01 PUMP MOTOR BALANCING

Description. This pay item consists of furnishing labor, material and equipment to balance a motor as specified herein and indicated by the Engineer at a designated pumping station.

Materials. Contractor shall provide all instruments for testing the motors and balancing. The instruments and equipment shall be calibrated before testing. Proof of calibration shall be presented at each pumping station prior to testing.

Work Description. This item shall consist of balancing a motor of a specified horsepower. The balancing shall be done in conjunction with the motor inspection tests. The Contractor shall record all test readings as identified in the motor inspection before and after balancing and with coupled and uncoupled drive shaft.

Method of Measurement. Each motor of a specified horsepower that is balanced in accordance with manufacturer's recommendations and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for PUMP MOTOR BALANCING which shall be payment in full for the work described herein.

PUMP REBUILD PROGRAM

Scope Of Work. There are six types of pump rebuilds. After the Engineer and Pump Station Specialist have analyzed the condition of each selected pump and agreed to the type of rebuild and work schedule, the Engineer will issue an authorization for that specific type of rebuild. The Electrical Maintenance Contractor shall provide all the services as required during each calendar year of the Contract. The rebuild program locations are based upon site inspection and operational data including historical data of the pump capacity and vibration analysis. The Contractor is advised that the Engineer may change the proposed list of locations for rebuild as circumstances warrant during the contract year(s). The Electrical Maintenance Contractor shall submit the recommendations for pump repair or replacement any time during each calendar year.

Pump Station Specialist Requirements. The Pump Station Specialist is responsible to oversee the work on each pump, including removal, disassembly, and re-Installation. The Specialist will be required to provide documentation on a detailed inventory which includes test measurements such as micrometer measurement of the shafts, bearings, total indicator readings, threads per inch, shaft length and size, shaft stick-up, impeller settings, and end play. He is responsible for properly identifying all existing IDOT inventory and any removed or replaced parts. All inventories shall be properly tagged to IDOT specifications. The Specialist shall also perform inspections on repaired or new equipment, record any discrepancies, and provide recommendations on any/all aspects of the pump rebuild program.

Specialty Pump Repair Service Company. A minimum of six potential vertical/submersible service repair companies, within the tri-state area of Illinois/Indiana/Wisconsin shall be submitted during the pre-construction meeting, for review and approval of the Engineer. The Contractor shall be responsible to provide repair quote from approved vendors. Transportation of pump equipment in the tri-state area is included in each of the pay items. Cost of transportation outside this region will be discussed with the Engineer and can be paid as a separate item.

Specialty Pump Removal and Replacement Service Co. The Electrical Maintenance Contractor shall contract with a Specialty Pump Removal and Replacement Service Company, to establish a contractual arrangement for selected on call services for the pump rebuild program as specified in Pay Items Types 1, 2, and 3. The Specialty Pump Service Contractor is necessary to supplement the contractor's forces for certain projects involving the rebuild of certain select pumps where because of the type of rebuild, factory trained personnel having special technical qualifications would be desirable to facilitate certain rebuild projects. The Service Co. also shall provide quality control and quality assurance for work performed on selected vertical axial flow pumps. The Service Co. shall furnish factory trained or certified personnel with a minimum of 15 years experience and expertise in the removal and replacement of vertical mixed flow pumps. This Service Co. shall adhere to the above described Specialty Pump Repair Service Company

requirements when providing a quote for repair or replacement and shall follow General pump rebuilding program procedures.

The Electrical Maintenance contractor's personnel shall coordinate with the Service Co.'s personnel on scheduling and performing removal, replacement, energizing, de-energizing and disconnection of any motor electrical splices at the junction boxes.

The following are the procedures by which a pump rebuild is executed. Charges for these items shall be paid through the following pay items:

- PRB1 Pump Rebuild Type 1**
- PRB2 Pump Rebuild Type 2**
- PRB3 Pump Rebuild Type 3**
- PRB4 Pump Rebuild Type 4**
- PRB5 Pump Rebuild Type 5**
- PRB6 Pump Rebuild Type 6**

Pump Rebuild Program Procedures. The pump rebuild program is primarily developed using operational data received by testing and inspecting pumps via various routine maintenance programs and periodic inspections. Each pump rebuild is normally executed when spare part(s) are available in State Stock. Following is a step by step procedure for this program:

General Procedures:

- Pump is selected for the rebuild program.
- The Specialist is scheduled to be present for removal and reinstallation of the pump.
- An inspection report of the removal is completed and submitted to IDOT by the PS Specialist with their recommendations.

Case A: If pump/pump part is to be repaired:

1. The pump or its part shall be sent to the service Repair Company to be inspected.
2. The service co. shall solicit and obtain a quote(s) for pump repair(s).
3. The quote(s) are analyzed by the IDOT Engineer to determine which company shall be authorized to do the repair. The service co. shall be responsible to transport the pump (if necessary) to the selected company's facility for the repair as specified in the following pump rebuild pay items.
4. Following the repair(s) the pump/part(s) shall be inspected and approved by the PS Specialist. Before assembly by the repair facility, the PS Specialist for review and approval shall submit a corresponding inspection report to the Engineer.
5. The Engineer shall review the repair report and final re-assembly, and if found satisfactory shall approve the subsequent return of the repaired materials to the designated Pump Station.

Case B: If State Stock Pump/Pump Part(s) are to be used as a replacement:

1. The state stock pump/pump part(s) shall be disassembled and inspected by the Engineer and the PS Specialist to determine satisfactory condition.
2. If the spare part(s) are determined (or suspected) to need reconditioning they shall be sent to a service company. The same procedure(s) should then be followed as in Case A above.

Case C: If Pump/Pump Part(s) are to be replaced:

1. The PS Specialist shall submit a report to the Engineer indicating the type, make, model and material specification for the pump replacement parts.
2. The PS Specialist and the Engineer shall review the manufacturer's pump/pump part(s) literature and test data.
3. The Engineer shall make arrangements to procure the selected pump/pump part(s) for replacement.
4. Following delivery of the new equipment, the PS Specialist shall inspect it and submit a report to the Engineer for approval.

PRB1 PUMP REBUILD, TYPE 1

Description. This item shall consist of providing transportation within the Tri-State area, removal and re-Installation of a complete mixed flow pump assembly as a single unit not including the motor. The Pump Removal and Replacement Service Co. shall remove and install the pump as specified herein and conform to PR496. The service co. shall procure quotes for the pump repair as directed by the Engineer. The Engineer will evaluate the specialty service quotations and authorize work according to account PV. This type of work would be applicable for Pump Stations 25 and 47.

Work Description. As part of removal and re-installation the service co. shall provide all labor, tools, transportation and the use of a crane.

The work shall include but not be limited to the following items:

- 1) De-coupling and removing the motor drive from the pump assembly.
- 2) Complete removal of the pump assembly including the discharge column, drive shafting, enclosing tube and bowl as a complete unit.
- 3) Loading and unloading of the complete unit on a flatbed truck.
- 4) Transportation of the complete pump assembly to the approved service company shop for repairs and delivery of the pump back to the station upon completion of work.
- 5) Re-Installation of the complete pump assembly includes the motor.
- 6) Provide all services for start-up and testing prior to putting the pump back in service.
- 7) All work shall be accompanied with its respective warranties and guaranties.
- 8) If test results are unsatisfactory, the Contractor shall be responsible for analyzing all operational problem(s) and resolving it to the Engineer's satisfaction.

The above information is for removal and for information only. Exact procedure necessary for removal and re-Installation of a complete operational pump is the responsibility of the Service co.. This item shall also include the loading and unloading of pump parts and equipment.

Pump capacity, vibration tests, motor current and voltage readings shall be taken upon Installation of pump. The readings and tests shall conform to the pump and motor specifications, or be approved by the Engineer.

Method of Measurement. Each removal and re-Installation of a complete mixed flow pump assembly as a single unit including all connections and transportation as specified herein and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for PUMP REBUILD, TYPE 1, which shall be payment in full for the work described herein.

PRB2 PUMP REBUILD, TYPE 2

Description. This item shall consist of providing transportation within the Tri-State area for, removal and reinstallation of a pump bowl from the complete pump assembly as a single unit not including the motor. The pump removal and replacement service company. Shall remove and install the pump as specified herein and in conformance with PR496. The Service Company shall procure quotes for the pump repair as directed by the Engineer. The Engineer will evaluate the specialty service quotations and authorize work according to account PV. This type of work shall be applicable for Pump Stations 2, 3, 4, 24, 29, 33, 35 and 47.

Materials. This item shall require the furnishing of stainless steel bolts and oil for lubrication.

Work Description. The work within this item shall require the use of a crane and chain falls. The Service Company shall provide all equipment, transportation and labor necessary to work as described herein. The work shall include but not be limited to the following items:

- 1) Disconnect breaker
- 2) Uncouple motor coupling
- 3) Lift motor and set aside
- 4) Remove dresser coupling
- 5) Set up chain fall on top of hatch or use a crane if required
- 6) Lift pump and column assembly to allow space for removal of bowl assembly from bottom of column pipe. (That contains the discharge pipe, bowl and oil tube assembly including the shaft and motor stand.)
- 7) Brake loose tube tension unit.
- 8) Disconnect grease line from the assembly
- 9) Drop bowl assembly
- 10) Break loose the oil tube and shaft coupling
- 11) Remove bowl
- 12) Take out shafting and oil tube assembly

The above information is for removal and for information only. Exact procedure necessary for removal and re-Installation of a complete operational pump is the responsibility of the Service company. This item shall also include the loading and unloading of pump parts and equipment.

Pump capacity, vibration, motor current and voltage readings shall be taken upon Installation of pump. The readings and tests shall conform to the pump and motor specifications or be approved by the Engineer.

Method of Measurement. Each bowl that is removed and reinstalled per pump as described herein and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for PUMP REBUILD, TYPE 2, which shall be payment in full for the work described herein.

PRB3 PUMP REBUILD, TYPE 3

Description. This item shall consist of providing transportation within the Tri-State area for, removal and reinstallation of a complete mixed flow pump assembly in stages and disassembly of the complete unit on pump station grounds. The pump removal and replacement Service Company shall remove and install the pump as specified herein and conform with PR496. The Service Company shall procure quotes for the pump repair as directed by the Engineer. The Engineer will evaluate the specialty service quotations and authorize work according to account PV. This type of work will be applicable for Pump Stations 2, 3, 4, 29, 33 and 35.

Work Description. The service company shall furnish all equipment, labor, transportation and material, including lifting crane to perform the work as specified herein. This work shall include but not be limited to the following items:

Disassembly of the pump into the following parts: motor, oil tube sections, shafting, coupling, bearing, bowl assembly, column pipes in sections, motor stand, and set-up for inspection by a service manufacturer for service and repairs and loading and unloading of equipment that requires inspection and repair.

The above information is for removal and for information only. Exact procedure necessary for removal and reinstallation of a complete operational pump is the responsibility of the Service Co.. This item shall also include the loading and unloading of pump parts and equipment.

Pump capacity, vibration tests, motor current and voltage readings shall be taken upon Installation of pump. The readings and tests shall conform to the pump and motor specification, or be approved by the Engineer.

Method of Measurement. Each pump that is removed and reinstalled per pump station, including all equipment, labor, transportation and approval of the Engineer shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the contract unit price each for PUMP REBUILD, TYPE 3, which shall be payment in full for the work described herein.

PRB4 PUMP REBUILD, TYPE 4

Description. This item shall consist of providing transportation within the Tri-State area for, removal of wetpit/drypit submersible and side volute discharge pumps and their rotating assembly for service, repair and reinstallation. The Contractor shall remove and install the pump as specified herein and conform with PR496. The Contractor shall procure quotes for the pump repair as directed by the Engineer. The Engineer will evaluate the specialty service quotations and authorize and pay for work according to account PV. This type of work will be applicable for Pump Stations 2, 3, 5, 7, 8 - 23, 25, 26 - 32, 34, 36 - 44, 46 - 48, 50 and 51.

Work Description. The service company shall furnish all equipment, transportation and labor necessary to perform the work as specified herein. This work shall include but not be limited to the following items:

- 1) Setting up for removal, **Disconnect electric connections**
- 2) Disconnecting the drive shaft from the rotating assembly
- 3) Close gate valve and provide a blind flange if necessary to stop water leaks
- 4) Loosening the bolt of the rotating assembly from the volute
- 5) Remove rotating assembly out from pump station
- 6) Loading and unloading of equipment that requires inspection and repair.

This work will consist of removing and installing the open shaft and rotating assembly and setting up inspection for manufacturer's sales and service companies for service and repairs.

The above information is for removal and for information only. Exact procedure necessary for removal and reinstallation of a complete operational pump is the responsibility of the service company. This item shall also include the loading and unloading of pump parts and equipment.

Pump capacity, vibration tests, motor current readings shall be taken upon Installation of pump. The readings and tests shall conform to the pump and motor specifications or be approved by the Engineer.

Method of Measurement. Each side volute discharge pump and its rotating assembly that is removed and reinstalled as described above and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for PUMP REBUILD, TYPE 4, which shall be payment in full for the work described herein.

PRB5 PUMP REBUILD, TYPE 5

Description. This item shall consist of removal of an existing side volute discharge pump and motor assembly and replace with a dry pit submersible pump as furnished elsewhere herein. This item will be applicable for Pump Stations 32.

Materials. The pump removal and replacement Service Company shall replace the gate valve of the removed pump and replace with a gate valve that is specified below.

- 1) Gate valves shall have a CWP non-shock rating of 150 psi
- 2) Gate valves shall be metal seated type, round, port design for high flow capacity.
- 3) Gate valve body shall be constructed of cast iron with an inner stainless steel lining. All wetted parts of the body, chest area and packing chamber shall be constructed of type 316 stainless steel for maximum corrosion resistance.
- 4) The body shall be a wafer face-to-face design with supporting ribs between the raised face flange to provide additional valve strength. Flange bolt holes shall be drilled for through bolting, except where tapped as required in the chest area, to the ANSI class 125/150 standard.
- 5) The gate shall be constructed of stainless steel and finish ground on both sides. The gate shall have a beveled, knife-like edge.
- 6) The valve stem shall be constructed of stainless steel and shall have double-pitch threads. Gate guides and jams shall be provided for proper support and positive seating of the gate against a raised face seat.
- 7) The gate valve packing shall be plastic coated for corrosion resistance. The packing chamber shall have a smooth-surface liner of uniform chamber width that shall accept extra ring type layers of packing material. Packing gland adjusting bolts shall be easily accessible.
- 8) The gate valve superstructure shall be fabricated, angular steel. A bronze yoke sleeve shall be provided as part of the superstructure for ease of valve operation.
- 9) Non-motorized gate valves shall be provided with bevel gear actuators to provide vertical mounting for a chain wheel actuator. The chain wheel actuator shall be as specified elsewhere herein.
- 10) The gate valve shall be provided with chain wheel actuator for manual operation. The chain wheel shall be provided with rust-resistant chrome-plated operating chain of sufficient length to allow floor operation. The chain wheel shall be positioned 90 degrees relative to the valve/pipe center-line to assure floor operation.
- 11) The gate valve shall be Dezurick Series L, ITT Fabri, or approved equal.

Installation. All equipment furnished, installed or mounted for this pay item shall conform with the applicable pump station reference specifications detailed elsewhere herein.

The Contractor shall furnish the labor to remove and install all electrical wiring, conduits, relays, fuses, circuit breakers, knife switch disconnects, starters, timers, and any other electrical appurtenances required. The electrical schematic diagram and piping layout shall be submitted for approval by the Engineer.

The pumps shall be installed in compliance with the manufacturer's recommendations.

The pump shall be removable through the pump access hatch. Provide a means to guide the draw-down pump into place when the pump is lowered into the dry pit through the pump hatch. Submit details to the Engineer for approval prior to Installation.

Each installed pump shall be complete with an inlet stand assembly, including anchoring flanges and an integral port suction elbow and clean out port with removable cover, this shall be indicated on submitted drawings.

Each installed pump shall be installed on a steel base support of the pump manufacturer's design and recommendation, designed to straddle the pump inlet port area for access to the pump suction pipe.

The base shall be of adequate strength and rigidity to prevent harmful vibration or deflection of the pump piping from the forces involved in the application. Data submitted for approval shall include calculations supporting an included manufacturer's certification of the adequacy of the base design. The base may be a combination of a steel frame and concrete pad, as required to properly join the pump with the new and/or existing piping as approved by the Engineer.

After assembly and Installation on the foundation, the pumping units shall be leveled, aligned, wedged in place and grouted with a non-shrink grout. Grouting shall not take place until after the initial fitting and alignment.

The manufacturer shall inspect the pump Installation and shall certify that the pumps have been installed properly. Information submitted for approval shall include a letter of intent to provide this certification.

In addition, the services of a qualified representative of the manufacturer shall be provided to supervise the testing of the equipment, make any necessary adjustments, place it in initial trouble-free operation, and instruct the operating personnel in its operation and maintenance.

Testing. After Installation of the pumping units and all accessory equipment, the units shall be subjected to running tests under actual operating conditions. The tests shall be made at the expense of the Contractor and conducted in the presence of the Engineer and the State of Illinois. The following items shall be specifically checked:

- The units are installed according to plans and specifications and the manufacturer's instructions:
- There is no pipe strain on the pump units.
- The units are properly aligned.
- Vibration limits are with Hydraulic Institute Standards.
- There is no over heating of bearings or other parts.
- The full load current is not exceeding the nameplate rating.
- The units are properly grouted and secured.

The tests shall include a timed pump run and a field capacity check. If, in the judgment of the Engineer, pump performance, as measured in the field test, is not substantially true to published characteristics, modification, adjustment or replacement of the equipment shall be made to achieve specified performance results.

Due to the required continuous operation of the station the pumps may be installed and field tested progressively, as approved by the Engineer.

Clean-Up and Safety. The work site shall be maintained in a clean condition, free of hazards, all in conformance with the requirements of Article 107 of Standard Specifications. Special care shall be taken to assure that electrical systems are not left in an exposed or otherwise hazardous condition. All electrical boxes, cabinets, pole handholes, etc., which contain wiring either energized, or non-energized, shall be closed or shall have their covers in place and shall be locked when possible during off-work hours.

Method of Measurement. Each side volute discharge pump and motor assembly that is removed and replaced with a dry pit submersible pump as specified herein and approved by the manufacturer and the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for PUMP REBUILD, TYPE 5, which shall be payment in full for the work described herein.

PRB6 PUMP REBUILD, TYPE 6

Description. This item shall consist of furnishing all material, transportation, labor and equipment for the removal of an existing side volute discharge pump and motor assembly and replace with a dry pit submersible pump as furnished elsewhere herein. This item will be applicable for Pump Station 14. This

work includes the replacement of the pump discharge pipe to the first manhole about 16' away from the pump station.

Materials. The pump removal and replacement Service Company shall replace the gate valve of the removed pump and replace with a gate valve that is specified below.

- 1) Gate valves shall have a CWP non-shock rating of 150 psi
- 2) Gate valves shall be metal seated type, round, port design for high flow capacity.
- 3) Gate valve body shall be constructed of cast iron with an inner stainless steel lining. All wetted parts of the body, chest area and packing chamber shall be constructed of type 316 stainless steel for maximum corrosion resistance.
- 4) The body shall be a wafer face-to-face design with supporting ribs between the raised face flange to provide additional valve strength. Flange bolt holes shall be drilled for through bolting, except where tapped as required in the chest area, to the ANSI class 125/150 standard.
- 5) The gate shall be constructed of stainless steel and finish ground on both sides. The gate shall have a beveled, knife-like edge.
- 6) The valve stem shall be constructed of stainless steel and shall have double-pitch threads. Gate guides and jams shall be provided for proper support and positive seating of the gate against a raised face seat.
- 7) The gate valve packing shall be plastic coated for corrosion resistance. The packing chamber shall have a smooth-surface liner of uniform chamber width that shall accept extra ring type layers of packing material. Packing gland adjusting bolts shall be easily accessible.
- 8) The gate valve superstructure shall be fabricated, angular steel. A bronze yoke sleeve shall be provided as part of the superstructure for ease of valve operation.
- 9) Non-motorized gate valves shall be provided with bevel gear actuators to provide vertical mounting for a chain wheel actuator. The chain wheel actuator shall be as specified elsewhere herein.
- 10) The gate valve shall be provided with chain wheel actuator for manual operation. The chain wheel shall be provided with rust-resistant chrome-plated operating chain of sufficient length to allow floor operation. The chain wheel shall be positioned 90 degrees relative to the valve/pipe center-line to assure floor operation.
- 11) The gate valve shall be Dezurick Series L, ITT Fabri, or approved equal.

The Contractor shall remove existing check valve at Pump Station 14. The Contractor shall furnish and install a TightFlex check valve or equivalent.

Quantity	Size
1	16 inch – TideFlex Series 39 Flanged Check Valve
1	14 inch – gate valve 125# flanged
1	Pump Section Elbow Flanged 20 ¾ inches Face to Face
1	16" 150# Flange X Plain end Ductile Iron Spool, 16' pipe
1	16" x 12" Concentric pipe Reducer
1	12 inch base elbow
1	16 inch Schedule 40 LR Elbow Flanged
2	16" Schedule 40, 10' pipe

The above quantities and lengths are approximate and are listed for information only. Exact quantities, dimensions and all other materials that may be necessary to render the new Installation complete for operation is the responsibility of the Service Company.

Installation. All equipment furnished, installed or mounted for this pay item shall conform to the applicable pump station reference specifications detailed elsewhere herein.

The Contractor shall furnish the labor to remove and install all electrical wiring, conduits, relays, fuses, circuit breakers, knife switch disconnects, starters, timers, and any other electrical appurtenances required. The electrical schematic diagram and piping layout shall be submitted for Engineer's approval.

The pumps shall be installed in compliance with the manufacturer's recommendations.

The pump shall be removable through the pump access hatch. Provide a means to guide the draw-down pump into place when the pump is lowered into the dry pit through the pump hatch. Submit details to the Engineer for approval prior to Installation.

Each installed pump shall be complete with an inlet stand assembly, including anchoring flanges and an integral port suction elbow and clean out port with removable cover, this shall be indicated on submitted drawings.

Each installed pump shall be installed on a steel base support of the pump manufacturer's design and recommendation, designed to straddle the pump inlet port area for access to the pump suction pipe.

The base shall be of adequate strength and rigidity to prevent harmful vibration or deflection of the pump piping from the forces involved in the application. Data submitted for approval shall include calculations supporting an included manufacturer's certification of the adequacy of the base design. The base may be a combination of a steel frame and concrete pad, as required to properly join the pump with the new and/or existing piping as approved by the Engineer.

After assembly and Installation on the foundation, the pumping units shall be leveled, aligned, wedged in place and grouted with a non-shrink grout. Grouting shall not take place until after the initial fitting and alignment.

The manufacturer shall inspect the pump Installation and shall certify that the pumps have been installed properly. Information submitted for approval shall include a letter of intent to provide this certification.

In addition, the services of a qualified representative of the manufacturer shall be provided to supervise the testing of the equipment, make any necessary adjustments, place it in initial trouble-free operation, and instruct the operating personnel in its operation and maintenance.

This work shall also include removing the discharge pipe and replacing it with an approved 16" discharge pipe at PS 14, coring of the wet pit concrete wall. Also installing a wall pipe leak seals shall be included as a part of the scope of work.

The Contractor shall coordinate Installation of the pump which includes Installation of the pump which includes the check valve, gate valve and appurtenances. Restoration of location to the original status is required before final acceptance.

Testing. After Installation of the pumping units and all accessory equipment, the units shall be subjected to running tests under actual operating conditions. The tests shall be made at the expense of the Contractor and conducted in the presence of the Engineer and the State of Illinois. The following items shall be specifically checked:

- The units are installed according to plans and specifications and the manufacturer's instructions.
- There is no pipe strain on the pump units.
- The units are properly aligned.
- Vibration limits are with Hydraulic Institute Standards.
- There is no over heating of bearings or other parts.
- The full load current is not exceeding the nameplate rating.
- The units are properly grouted and secured.

The tests shall include a timed pump run and a field capacity shock. If, in the judgment of the Engineer, pump performance, as measured in the field test, is not substantially true to published characteristics, modification, adjustment or replacement of the equipment shall be made to achieve specified performance results.

Due to the required continuous operation of the station the pumps may be installed and field tested progressively, as approved by the Engineer.

Clean-Up and Safety. The work site shall be maintained in a clean condition, free of hazards, all in conformance with the requirements of Article 107 of Standard Specifications. Special care shall be taken to assure that electrical systems are not left in an exposed or otherwise hazardous condition. All electrical boxes, cabinets, pole handholes, etc., which contain wiring either energized, or non-energized, shall be closed or shall have their covers in place and shall be locked when possible, during off-work hours.

Method of Measurement. Each side volute discharge pump and motor assembly that is removed and replaced with a dry pit submersible pump as specified herein and approved by the manufacturer and the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price each for PUMP REBUILD, TYPE 6, which shall be payment in full for the work described herein.

PS01-PS02 PUMP, SCADA PANEL, FURNISH AND INSTALL

Description. The Contractor shall furnish, deliver, and install a new SCADA panel. The existing panel shall be removed and relocated as directed by the Engineer. The procurement shall include start-up and calibration service by the supplier. This work shall be done at pump station 2, 12, 16, 17, 20, 21, 22, 23, 29, and 30.

The mounting of the SCADA equipment, the furnishing and installing of transducers and controls at existing pump station, pumping control equipment and all interconnecting wiring between the SCADA equipment and devices. All materials and work not expressly specified but necessary for the proper completion to furnish and install a SCADA panel in a neat, workmanlike manner shall be considered incidental and shall be included under the unit bid prices.

All materials and work not expressly specified but necessary for the proper completion in a neat, workmanlike manner shall be considered incidental and shall be included under this pay item.

General. The Contractor shall furnish where indicated and applicable, and as directed by the Engineer, all materials, equipment and labor, to perform work as specified. The District has in place a Supervisory, Control And Data Acquisition (SCADA) system to remotely monitor, alarm and control its un-manned storm water pumping stations. These stations are to be considered critical systems that must remain operational at all times.

The SCADA system central equipment is in place, operational and several stations, as noted elsewhere herein, have been equipped with the required remote terminal units (RTU's) and interfacing transducer sets. The system has become part of the District's standard for storm water pumping stations

For compatibility with the District's existing system equipment, the Pump Station SCADA equipment shall be a RSView/ControlLogix system, as programmed and configured for IDOT District One, as manufactured by Rockwell Automation. Information on the system and local service is available from:

Meade Electric Company Inc.
9550 W. 55th Street Suite A
McCook, IL 60525
Phone: (708) 588-2515
Fax: (708) 588-2501
Contact: Scott Myers

Other work, including various appurtenant items for the SCADA system, shall be performed by the Contractor. Including but not limited to the mounting of the SCADA equipment, the furnishing and installing of Software and Hardware and all interconnecting wiring between the SCADA equipment and these devices

SCADA Panel. The Contractor shall furnish a Supervisory, Control And Data Acquisition (SCADA) panel complete with programmable logic controller (PLC), ControlLogix processor A/B model 1756 L62, remote transducer interface hardware, enclosure, back-up power UPS, MMI, communication modems and programming as specified herein and indicated by the Engineer

All furnished equipment shall be UL listed and shall be appropriately labeled as such.

Equipment catalog information shall be submitted to the Engineer for approval (as specified elsewhere herein).

All panel wiring diagrams and programming shall be submitted and approved by the Engineer before the equipment is furnished.

Enclosure. The SCADA enclosure shall be a NEMA 12 single door enclosure fabricated from hot dipped galvanized steel, ASA-61 exterior, white interior.

All equipment shall be installed in the SCADA enclosure unless directed otherwise by the Engineer.

The wet well level display, pump manual lock-out button with protective guard, alarm light and manual purge button shall be furnished and mounted on the front face of the enclosure. Also furnish and install ground bus by Square D part # PK12GTA, light switch box and cover by Hubbell part # CS1201, convenience light 24" Metalux part # SN-120LTS 120 V-U, convenience outlet ground fault part # GRF 5252.

The PLC shall be mounted on the back plane of the SCADA panel. A cutout shall be provided on the enclosure door to allow for the installation of the MMI hardware. The MMI hardware shall come pre-programmed with the IDOT generic configuration. The MMI shall come pre-wired for power and integration to the PLC, as per IDOT standard configuration. The enclosure door shall be reinforced to provide rigidity when a MMI key is pressed (no deflection shall be experienced when PLC keys are pressed).

All equipment furnished shall be wired, installed and interfaced to the PLC within the enclosure.

Pump Manual Lock-Out Button. The button shall be used for disconnecting all PLC pump controls when pressed in (Lock-out). However, the manual lock-out will not alter the operation of other control systems.

This button shall be a round, red, mushroom push-pull type button, minimum of 30mm in diameter with one pulled position contact (normally open) and two pushed positioned contacts (normally closed).

The button shall be Idec, model type AYD32ON-R with specified auxiliary contacts or Engineer approved equivalent. A protective ring, similar to AB 800T-N310 or Engineer Approved shall be configured as part of the button.

Alarm Light. The alarm light shall lit by the PLC when an alarm condition is detected.

The alarm light shall be round, red, push-to-test type, and a minimum of 30mm in diameter.

The alarm light shall be Idec, model type ALD212611N-R or Engineer approved equivalent.

Manual Purge Button. The button shall activate the purge sequence on the SCADA system reactive air system (specified elsewhere herein) when pushed.

The button shall be round, black, momentary contact type button, minimum of 30mm in diameter. This button shall be Idec, model type ABD21ON-B or Engineer approved equivalent.

Panel Power Supply System. The power supply system shall be capable of providing power to all equipment internal to the SCADA panel by furnishing and installing two (2) Sola power supply 12VDC 6 Amp part # SFL6-12-100, Eight (8) fuse holders with blown fuse indicators A/B part # 1492-H4 and two (2) fuse holders with blown fuse indicators A/B part # 1492-H5.

The PLC, alarm light and reactive air system shall be powered by a self charging, automatic battery back-up system that will provide a minimum of twelve (12) hours of reserve power by furnishing and installing a one (1) KVA double conversion backup power.

Pneumatic Air System. This item shall consist of furnishing two (2) reactive air systems capable of monitoring wet well elevations and one (1) inflow air system. Each reactive air system shall consist of a compressor, solenoid, pressure to current conversion circuit.

Furnish and install a compressor and solenoid, which shall have a design life of forty (40) years and shall be Gast part # MOA-p101-CA and ASCO model type 8360G77, respectively, or Engineer approved equivalent. Also furnish and install pressure transducer Moore Industries PIT 0-27 PSIG 4-20 mA 12-42 VDC FAI-DIN.

All equipment needed and recommended by the manufacturer to ensure system warranty shall be furnished, including miscellaneous mounting apparatuses.

Power Monitoring Conversion Circuit. A power monitoring conversion circuit shall be provided capable of converting power monitoring transformer currents and voltages to a direct current 4-20 mA signal as a PLC analog input by furnishing and installing voltage transducer(s) 0-150 VAC 4-20 mA part # 256 TVLU-PZHG-C6-BC

Motor Current Monitoring Conversion Circuit. A motor current monitoring conversion circuit shall be provided capable of converting current monitoring transformer currents and voltages to a direct current 4-20 mA signal as a PLC analog input by furnishing and installing current transducer(s) 0-5 A 4-20 mA part # 256 TALU-LSHG-C6-BC

Surge Protection. The circuit shall contain necessary surge suppression devices to protect critical circuit elements from line surges. All equipment supplied and installed by the contractor shall be properly installed and protected against voltage surges, transients and lightning strikes by furnishing and installing phone line surge arrester DITEK part # MRJ11SCP-RUV and two (2) surge suppressors by Power Integrity Corp. part # ZTAS-03-15-0.

Programmable Logic Controller (PLC). The PLC shall be Allen-Bradley ControlLogix sized as required or Engineer approved equivalent.

The ControlLogix system shall be implemented in one of the following types of I/O configurations:

- | | |
|---------|---|
| Type A: | Chassis: 17 slot, AB#1756-A17, Power Supply: AB#1756-PA75; Controller AB#1756L62; DI modules: Qty. (5) 16 point DC AB#1756-IB16; AI modules: Qty. (3) AB #1756-IF8; DO Modules: Qty. (3) AB#1756-OW16I, Ethernet and MODBUS communication modules AB# 1756-ENBT and Prosoft # MV156-MCM, blank slot covers, cables and interface modules. |
| Type B | Chassis 13 slot, AB#1756-A13; Power Supply: AB#1756-PA75; Controller AB#1756L62; DI modules: Qty. 5 12/24 VDC, AB#1756-IB16; AI modules: Qty. 2 AB #1756-IF8; DO Modules: Qty. 3 contact output, AB#1756-OW16I, Ethernet and MODBUS communication modules AB# 1756-ENBT and Prosoft # MV156-MCM, blank slot covers, cables and interface modules. |

All components shall be labeled with a rigid, two-color laminated, plastic nameplate indicating the enclosed contents. The lettering shall be engraved, at least one-half inch high, and highly contrast with its background. The labels shall be permanently affixed to the cabinetry with stainless steel screws or rivets. All wiring shall be uniquely color coded with its color shown on the associated system documentation. A permanent tag affixed within three (3) inches of every termination shall indicate the function and placement of all connectors. All terminals shall be labeled and identified on the associated system documentation. The interior cabinet door housing the PLC shall have the procedures laminated and posted for replacing any processor equipment and replacing it with a rotating spare; downloading the PLC programs from the other system processors, interrogating the PLC to obtain specific levels of information in registers, and set points. Also provided in the cabinetry shall be holders for the circuit diagrams and system Descriptions. The initial set points for alarms and controls shall be posted. Other abbreviated maintenance and user procedures shall be created, laminated, and posted in appropriate areas, as determined by the Engineer. Samples of all materials, and the attachment procedures shall be submitted for approval/revision to the Engineer before Installation.

The front of the SCADA panel shall be implemented with an industrial 19" resistive Touch screen Monitor, A VersaView 200R (6155F-NPXP) shall be Furnished and installed with the latest Pump Station SCADA RTU GUI application. This work shall include software configuration for communication to the PLC rack. The following software shall be furnished, configured, installed and interfaced with SCADA system: RSVIEW 32 Runtime with 300 tags, Windows 2000 or XP operating system, RSLinx communication driver and Microsoft Access data base. The equipment will be tested for proper performance during acceptance testing. The Contractor shall pay for any corrections required making the system fully operational. The contractor shall develop and install a RSView Screen file which shall be configured for each location based on the pump station equipment I/O.

Software installation and Screens Development

The pump station PLC application file and RSView Screen File shall be programmed and configured by the Contractor, to communicate, monitor, archive, control and alarm all I/O points in the existing pump station. The PLC shall be installed in the pump station and shall communicate over all communication media with remote processors at Schaumburg and the Contractor Dispatch Center. The PLC program shall include all set points related to software (internally and externally) triggered alarms. The Remote processors, Satellite and pump station HMI screens shall be identical such as the pump station information screen, control screen, main pump station screen and status screen are the same that will show all devices in the pump station properly controlled, monitored and archived.

Communication. The PLC data communicator shall be both a dialup telephone network and point multi-point radio system by furnishing and installing 56K external modem US Robotics part # USR 5686D, serial modem cable Belkin part # F2L088-06, Ethernet hub NetWare part # DS104.

Miscellaneous Equipment. The contractor shall furnish and install in addition to the above equipment wire, wire-way, nameplates, fuses, ground bus PK12GTA, convenience outlet, ground fault GRF5252, IEC terminal blocks 1492-W4, relay sockets A/B 700-HN125, 120VAC, DPDT relays A/B 700-HA21A1, 12VDC, DPDT relays A/B 700-HA32Z12, circuit breaker 20 Amp 120/240V one (1) pole 10,000 AIC Cutler hammer QC1020, keyboard, mouse, door-mounted keyboard tray, convenience light 24", SN-120 LTS, 120V-u light switch, box and cover, as required to make a complete and operational system.

Documentation. SCADA System Operations and Maintenance Manual

A SCADA system operations and maintenance manual shall be provided. This manual shall be targeted at the complete documentation of all equipment and software installed for an individual pumping station under these specifications. It shall serve as maintenance, trouble shooting and operations guide for the Electrical Maintenance Contractor who is responsible for maintaining the Department's pumping stations. The manuals shall be constructed in such a way as to meet environmental requirements of the pumping station including metal hinged binders and plastic sheet covers. The manual shall include but not be limited to the following items:

Table of Contents:

SCADA system Description
PLC operation, maintenance and programming Manual
Set point table listing all programmable set point values
PLC input/output designation table
Telemetry, control and alarm message specifications
List of materials supplied
All supplied equipment catalog cuts
Copies of all station labeling
Full size wiring diagrams (as described herein)
Cumulative storage curves and calculations
back-up control operations and elevations
PLC field replacement procedures
Three (3) copies of these manuals shall be furnished.

Diagrams. All circuit, system, wiring, block and interfacing diagrams shall be provided. The complete set of diagrams provided shall completely illustrate all wiring and equipment installed under these specifications including: termination points, equipment labeling, mounting and Installation dimensions and wiring. Seven (7) copies of each of these diagrams shall be provided (Six (6) on full size blue line plan sheets and One (1) on full size Mylar) prior to the beginning of the final acceptance testing. Each diagram shall be stamped record drawing and shall reflect all final wiring and Installations. A minimum of the following diagrams shall be provided:

- PLC I/O wiring diagram
- Pumping station interface diagram

- Telemetry panel diagram
- A complete block diagrams of all telemetry and control equipment installed
- Remote radio and phone line wiring and block diagram
- Pneumatic air system diagram

PLC Programming Documentation

All PLC program documentation shall be furnished to the Engineer on a DC in a Microsoft Word format.

General Description. The PLC shall be used as the primary, secondary or tertiary control system as determined by the Engineer for the pumping station. As a control system in the pumping station, the PLC shall have the capabilities of controlling all pumping station operations including control of pumps, fans, vents, greasers, pneumatic air systems and emergency power supplies independent of all other control systems. The PLC program shall be internally stored within the PLC's non-volatile memory. It shall be a completely independent program, which will not require any communications with any other system processor for operations. The PLC shall include all I/O noted by the Engineer on the SCADA I/O checklist. Inputs and outputs shall be wired to their corresponding high states noted on the checklist. PLC software shall include all setpoints related to software (internally) triggered alarms. This list shall be included as part of the software submittal.

Local Control. The PLC shall operate the pumping station as a completely independent primary, secondary or tertiary control system. It shall operate on dynamic or step control pumping logic as determined by the Engineer. No communications with any of the other system processors shall be needed by the PLC for control and operation of the pumping station. Care shall be taken during SCADA panel Installation and equipment interfacing to ensure that the PLC is totally independent of all other control systems and no common failure point exists prior to the motor start contactor.

Primary Control. If the Engineer determines the PLC as the primary control system", the PLC shall be the governing control system for pumping station control and operations based on its own internally stored program.

Secondary or Tertiary Control. If the Engineer determines the PLC as the secondary or tertiary control system, the PLC shall be the back-up control system for pumping station control and operations. As a back-up" control system the PLC shall monitor primary, or if acting as the tertiary control system, primary and secondary control systems for failure. When failure of all other preceding control systems is detected, the PLC shall assume control of the pumping stations operations based on its own internally stored program. It shall be ensured that there is absolute isolation of the PLC's control circuits from all other control systems control circuits. Each control system shall operate independently of one another.

Dynamic Pump Control. If the Engineer determines the PLC shall operate on dynamic pump control logic, the PLC shall determine pumping requirements based on a calculated Control Curve and set pointed benchmark control elevations.

Control Curve Calculation. The PLC shall continuously construct and evaluate a wetpit depth verses time curve (Control Curve) as part of the dynamic pump control logic. The slope ratio of the Control Curve shall be based on the vertical axis being wetpit depth in feet and the horizontal axis being time in minutes. A slope ratio of 1:1 means the water has risen one (1) foot in the last minute. A ratio of 2:1 means the water has risen two (2) feet in the last minute. Control decision points shall occur: at set pointed benchmark elevations; when the slope of the control curve changes direction and maintains that direction for a set pointed time interval; when the slope significantly changes magnitude and stays within that range for a set pointed time interval; and when a set pointed time interval has expired since the last control command. The curve shall be calculated continuously by the PLC with averaging and/or filtering used to compensate for wave action and other discontinuities. The dynamic pump control logic presently being used on State pumping stations shall be incorporated on future dynamic control stations.

Step Pump Control. If the Engineer determines the PLC shall operate on step pump control logic, the PLC shall determine pumping requirements based on set pointed benchmark control elevations. The number of set pointed benchmark control elevations needed will be specified by the Engineer.

While the pumping station PLC acts independently on a real-time basis, all system processors shall be capable of establishing a communications link between it and any system PLC. Once a communications link is established, the system processor will have the capability of remotely controlling and monitoring the PLC it has a communication link established to. Remote control and monitoring of the PLC shall include, but not be excluded to, controlling of pumps, changing of set pointed values, downloading/uploading of PLC programming and monitoring current pumping station operations.

If during remote testing the elevation in the wetpit reaches the all pumps stop elevation, the PLC will turn off the operating pumps.

The PLC shall have remote uploading and downloading capabilities. Any system processor shall have the capability of remotely loading programming to the PLC via telephone, radio or PLC maintenance port.

This shall include provisions so that when a PLC fails, a spare unit can be installed and the individualized PLC programming for that particular pumping station can be downloaded from any system processor via telephone line and radio communications. Remotely uploading all programming from the PLC to any of the system processors in the same manner as the downloading procedure.

Alarms. Any change of PLC digital input, digital output or register status (externally imputed or internally calculated) shall be considered an alarm and/or alarm conditions as herein these specifications. All alarms shall be sent to the central processor by the PLC.

The PLC shall receive pumping station status information from all of the telemetry and control equipment interfaced to it. The processor shall constantly scan the input information and determine (based on its internally stored software logic) if the station has an alarm condition. When an alarm condition is detected the associated processors shall be called and advised using the remote radio or dial-up telephone network (if failure of the remote radio is detected by the PLC). When the alarm condition ceases, an additional notification shall be made by the PLC. The PLC shall be configured in accordance with and as directed by the Engineer. The PLC shall operate the common alarm light (as specified elsewhere herein) based upon alarm conditions detected by its internal programming. All PLC alarms shall be capable of being acknowledged by the alarm acknowledgment button (as specified elsewhere herein).

All alarm conditions generated by the PLC and I/O changes in state shall be received by the central computer via polling. The SCADA system is a poll only system and no I/O changes in state shall trigger any report by exception telemetry. When an alarm condition is corrected, the corresponding message will be sent to the central processor the next time the pump station is polled. All data sent/received by the pump station shall be the same format. All communications shall be routed to the designated processor using radio system and/or dial-up telephone network facilities located at each facility. Radio shall be the telecommunications media of choice. A failure to contact a processor by radio shall imitate a call by dial-up telephone network. When a telecommunications media fails, the PLC shall send an alarm on the other available media indicating the failure. The PLC shall automatically re-send the initial alarm if the associated condition has not been corrected within a set point time interval beginning from the time the alarm condition was detected. In the event of failure to establish a useable telecommunications radio pathway the PLC will retry calling each processor a set pointed number of times after which, if failure still occurs, the PLC shall then call by telephone. It shall be ensured that any change of the PLC's digital input, digital output or register status (externally inputted or internally calculated) is sent to the receiver by the central processor.

Programming in the PLC shall be non-volatile. Volatile memory using lithium battery back-up shall be permitted. Permanently embedded programming shall be held in PROM chips. Operational and control programming subject to revision shall have battery back-up sufficient to sustain memory for a minimum of five (5) years without external power.

As the timing and power parameters inherent in a pumping station conflict with those typical of a microprocessor all necessary buffering, filtering, surge protection and time delays shall be incorporated in the hardware and programming of the PLC.

Central and Engineering Processor Programs. The SCADA system consists of three (3) central processors (IDOT Schaumburg, IDOT electrical maintenance office and EMC) and six (6) engineering processors.

Each processor in the system shall be configured, by the Contractor, to communicate, monitor, archive all I/O points, control and alarm each additional PLC installed in a pumping station over all communication media.

Software revisions or modifications required to integrate additional PLC's into the existing processor shall be provided by the Contractor. Processor functionality and integrity shall be maintained with each added PLC.

All mounting apparatuses necessary to rigidly wall or floor mount the SCADA panel. Conduits, wiring and fittings as required for a complete operational system is included in this pay item.

All equipment furnished and installed under this item shall be appropriately identified with nameplates as specified under Basic Materials and Methods, elsewhere herein.

Removal and Installation. The Engineer shall designate the Pumping Station to facilitate the removal and installation of SCADA panel. No splicing.

The Contractor shall maintain the operation of the pumping station. All operations shall be subject to approval of the Engineer.

The Contractor shall protect adjacent material, equipment and areas during process of removal and replacement of SCADA panel operations from all dirt, dust, debris or damage of any kind.

The SCADA panel shall be rigidly wall or floor mounted with an Engineer-approved mounting means.

Install a SCADA enclosure size 36" W X 90" H X 20" D Type A

Install a SCADA enclosure size 36" W X 48" H X 20" D Type B

All software shall be configured, installed and interfaced with existing SCADA system at the pumping station and at both central and satellite location to provide a complete and operational system

All equipment furnished, installed or mounted for this pay item shall conform to the NEC and applicable specifications for Basic Materials and Methods, elsewhere herein.

The Contractor shall submit catalog cuts, design drawings and product data for the Engineers approval prior to installation including all software as specified elsewhere herein. Three complete sets of record drawings, catalog cuts and O&M manuals shall be provided upon completion for Engineers approval.

Startup training onsite, a minimum of 8 hours shall be provided with each pump station.

Method of Measurement. Each furnished and installed SCADA panel and removal of existing SCADA panel as specified above and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the Contract unit prices each for

PS01 PUMP, SCADA PANEL, FURNISH AND INSTALL TYPE A

PS02 PUMP, SCADA PANEL, FURNISH AND INSTALL TYPE B

which shall be payment in full for the work as described herein.

PS03 PUMP, VIBRATION TESTING AND ANALYSIS

Description. The Contractor shall provide a Vibration and Analysis Testing Consultant who is a data analyst with a minimum of two years experience in vibration data collection and spectrum analysis, and shall have a Level II certification by a vibration institute or equivalent.

The Consultant shall conduct the testing and start-up on all the pumps and including new and/or rebuild. The Consultant shall provide recommendations for pump motor inspection, balancing, repair or replacement of pumps and motors, maintenance and troubleshooting of all associated equipment. A strobe tachometer should also be used to verify motor speed.

The Contractor shall provide the Consultant with records of the type of pump, head design, manufacturer's performance curve, moisture resistance and megger test results and other pertinent data to the pump operation prior to start up of the above inspections and testing.

The Contractor shall conduct the first vibration test with the capacity test.

The Consultant shall be equipped with required tools, transportation, equipment, instrumentation and supplies to perform the Pump Vibration and Analysis Testing Inspection.

The Vibration and Analysis Testing Consultant shall perform vibration analysis on all pumps, utilizing a Smart Meter Plus, Model 1330F or better which will include a copy of the associated software for IDOT and the electrical maintenance contractor use for the duration of the contract. The Electrical Maintenance Contractor shall calibrate and maintain the IDOT vibration meter including all software and accessories. The first Testing shall be conducted at the same time as the Yearly Pump Station Inspection and Pump Capacity Test. The 2nd Testing shall be due November 30 of each contract year. All results shall be entered into the Log Book for each station, in Chart Z. Each inspection report shall be entered into the EMCMS System. Any deficiencies found on this inspection shall have appropriate EMCMS Tickets issued, and the numbers shall appear on the inspection report, Form P-5. A start-up testing on the Pump repair/replacement work shall be scheduled by the Consultant following completion of any necessary repair/replacement work.

The Consultant shall provide testing, analysis, database development, baseline data acquisition and problem identification and reporting, for all the pumping station equipment.

Full vibration signatures shall be acquired for all mechanical equipment included in the program. the baseline data is to be analyzed to determine baseline condition of all equipment. The analysis will result in a series of reports that:(1) identify specific problems, (2) provide specific corrective actions, and (3) establish a priority (based on the problem severity) for maintenance actions.

Monitoring and analysis of the operating condition of the pumps is an absolute requirement of the predictive maintenance program. Therefore, all pumps will be monitored twice per year, additional tests are required for the pumps that indicate potential problems.

Problem Identification and Reporting:

A report will be prepared each month that defines specific maintenance tasks that are required to correct incipient problems identified by the monthly data acquisition and analysis program. These reports will be submitted within five (5) working days following completion of the data acquisition. The format of the report should be designed to reduce the amount of paper work necessary to properly maintain accurate communication between the Consultant and IDOT. Each report is to provide a prioritized list of specific maintenance or inspection tasks that are required to verify or correct developing problems.

The Consultant shall notify IDOT and the Electrical Maintenance Contractor immediately when any deficiency is noted that could jeopardize equipment operation or personnel safety. Written reports will address all monitoring points, but will place a priority on "exception" reports describing problems that have been identified including a detailed evaluation of pump status and recommended maintenance actions.

- a. Tests must be conducted with a flooded suction so not to cause vortexing or cavitation. For data history purpose each test should be conducted with about the same amount of pump submergence as the previous test for that pump. The Electrical Maintenance Contractor shall store or provide water in order to conduct the proper test in accordance with normal operation of the pumps. Two vibration readings shall be taken at the thrust end of the motor (one should be parallel to the discharge pipe and one perpendicular to the discharge pipe), and two readings shall be taken at the coupling end of the motor and should be in the same plane. Finally an axial reading should be taken. The transducer location shall be marked with different colors which will correspond to x and y-axis.
- b. The results of the tests shall be saved on intelli-cards or 3.5 inch floppy showing the velocity in inches per second (ips). In the event that the vibration exceeds 0.3 ips the Engineer may require that the motor be uncoupled from the pump and another test be conducted. Where motor speed is below 1000 RPM, the 0.3 ips velocity "evaluation point" shall be decreased by 10% for each 100 RPM below one-thousand. The worst case reading shall be assumed to be the "true" reading.
- c. Readings shall be considered "abnormal" when the vibration exceeds 0.3 ips. The test card data shall be entered into the EMCMS System for each station, no later than 48 hours after the completion of the inspection of each station, with the entire inspection report and test cards to be received by the Engineer by June 30th and November 30th of each contract year. Note the location axis of the transducer, the pump manufacturer, model number and serial number of the associated pumps must be specified for each station. Any deficiencies found on this inspection shall have appropriate Tickets issued, and the numbers shall appear on the inspection report, Form P-5.

Coordination with PS Specialist

The Vibration and Analysis Testing Consultant shall coordinate with the PS Specialist Consultant on all findings and results to develop an overall condition of the equipment.

Method of Measurement. This work shall be measured and paid on the basis of each pump tested in a pump station and analysis of results and reports delivered, as well as all labor costs, travel expenses, miscellaneous expenses, as specified in this pay item for each pumping station inspected.

Basis of Payment. This item shall be paid at the contract unit price each for PUMP, VIBRATION TESTING AND ANALYSIS of a pump that shall be payment in full for the work described herein.

PV01–PV03 VENDOR BUDGETARY ALLOWANCE

Description. This item is to establish a budget account to allocate funds for the payment of various types of repair services including replacement pumps, appurtenances, and miscellaneous system equipment required for the ongoing pump station system maintenance program but which are not accurately or completely identifiable at the time of bidding. When mentioned herein, Article 109.05 is modified whereas the Contractor shall be paid an administrative costs of an amount equal to five (5) percent of the first \$10,000, and the Department shall allow an additional one (1) percent of any amount over \$10,000 of the total approved costs, on an individual work authorization.

Following is detailed information concerning each major category of work, which requires the allocation of funds for certain expenses:

1. Pump Repair Services

The annual pump rebuilding program involves many repairs for which the costs cannot be estimated or determined until the pumps are removed from operation and disassembled for examination. Most pump repairs cannot be performed by the General contractor's forces, and it is therefore necessary to have various service and/or pump manufacturing companies perform the necessary specialty service work. Specifically, the work consists of the repair of pump bowl assemblies, discharge column repairs, shafting and oil tube assembly overhaul, and other miscellaneous services.

The Engineer will evaluate the specialty service quotations and authorize work accordingly. The total estimated amount of the annual expenses incurred for the services performed by others, which will be paid under Article 109.05 of the Standard Specifications as herein modified in Article 5.0, is \$150,000.00 as indicated for Pay Item PV01. For bidding purposes, this amount shall be used.

2. Pump Bowl Replacement

The annual pump rebuilding program involves the necessity to replace certain major parts of the pump assembly called the pump suction bowl. Until the pumps are removed from operation, it is not known whether pumps suction bowl will need to be replaced with a completely new unit. When it becomes known, after disassembly of the pump that the pump bowl cannot be repaired, the Contractor is directed by the Engineer to obtain quotations for a new replacement unit.

The Engineer will evaluate the specialty service quotations and authorize work accordingly. The total estimated amount of the annual expenses for the purchase of replacement bowl assemblies, which will be paid under Article 109.05 of the Standard Specifications, and as herein modified in Article 5.0, is \$150,000.00 as indicated for Pay Item PV02. For bidding purposes, this amount shall be used.

3. Complete Pump Replacement

The annual pump rebuilding program involves the need to replace complete pump assemblies at certain pump stations because of the extent of their deteriorated conditions found at the time of removal. For these cases, the Contractor must obtain quotations for direct replacements from the same manufacturer and also sometimes from other pump manufacturers.

The Engineer will evaluate the quotations and authorize procurement accordingly. The total estimated amount of the annual expenses for the purchase of complete pump assemblies, which will be paid under Article 109.05 of the Standard Specifications and as herein modified in Article 5.0, is \$150,000.00 as indicated for Pay Item PV03. For bidding purposes, this amount shall be used.

PW01 WET PIT, CLEANING

Description. This item shall include the removal of all debris from the designated pump station wet pit as described herein.

Work Description. The method by which the debris is removed from the wet pit shall include any traffic control, safety, transportation, and vacuum equipment and shall require the approval of the Engineer.

All removed material shall be disposed of outside the State right-of-way and in accordance with the local EPA rules and regulations.

Areas outside the bar screen(s)/trash rack(s) up to the inlet sewer shall be cleaned at the same time in accordance with Article 8.

Method of Measurement. Each square yard area of wet pit silt material that is cleaned and all refuse disposed of in accordance with the above specifications and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the contract unit price per square yard for WET PIT, CLEANING, which shall be payment in full for the work described herein.

PW02 WET PIT, POWER WASH

Description. This item shall consist of providing all labor, material, and equipment to power wash and clean IDOT pumping station wet pits, walls, floors, beams, grating, railings, piping, ladders, and stairs. This work will be authorized in conjunction with pumping station wet pit cleaning paid under a separate pay item elsewhere herein.

Equipment. 10,000 PSI water blaster

Method of Measurement. Each power wash hour as approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This work shall be paid at the contract unit price for each hour of WET PIT, POWER WASH, which shall be payment in full for the work described herein.

PUMPING STATIONS - Referenced Specifications

Equipment specified herein is intended for application at Pump Station Installations, either for use as part of routine repairs and replacement or as part of non-routine work, including specific separately paid work such as low flow pump Installations. Although not repeated here; specifications for other items, such as rigid steel conduit, shall apply equally here.

1. Safety Switches

Safety switches shall be heavy-duty type, UL listed as suitable for use as service entrance equipment and shall be in conformance with NEMA Standard KSI-1983 for type HD and with Federal Specification W-S-865c for heavy duty switches. Switches used as service entrance equipment shall have a factory-installed solid neutral and other switch shall have a factory-installed grounding kit unless otherwise indicated.

The switches shall have a quick-make, quick-break mechanism, full cover interlock to prevent opening the cover with the switch in the closed position and a position-indicating operating handle. The operating handle shall be well insulated from the current carrying parts of the switch.

Unless otherwise indicated, switches shall be rated 600 volts, and when used with UL listed Class R fuses, shall have a UL listed short circuit withstand rating of 200,000 RMS symmetrical amperes.

Unless otherwise indicated, safety switches shall be un-fused. Where fused switches are indicated, they shall be provided complete with US Class K-5 current limiting fuses.

Unless otherwise indicated, safety switches installed below grade or exposed to the weather shall have NEMA 4 stainless steel enclosures. Safety switches installed indoors above grade shall have NEMA 12 enclosures. Safety switches in explosion-proof hazardous locations shall be in enclosures suitable for the location.

2. Transformers

Unless otherwise indicated, transformers shall be General purpose dry type, 2-winding of the capacities and voltage indicated.

Transformers 15 KVA and below shall be indoor/outdoor type and those above 15 KVA shall be indoor type unless otherwise indicated.

Unless otherwise indicated, transformers 3 KVA and above shall have not less than four 2-1/2% taps in the high voltage winding, two above and two below rated primary volts.

Transformers shall be UL listed and shall meet all applicable NEMA, ANSI, UL, and IEEE Standards.

Unless otherwise indicated, transformers shall have 220 degrees C Class insulation but shall be designed for a maximum temperature rise of 115 degrees C, over an ambient temperature of 40 degrees C.

3. Manual Motor Starter Switches

Manual motor starter switches shall be complete with melting alloy type thermal overload protection, which shall be trip-free and resettable. The exact size of the overload element shall be coordinated for the specific respective motor.

The switches shall be rated not less than one horsepower at 115 and 230 volts single phase. The switches shall be single poles unless otherwise indicated.

Where indicated, the switches shall be equipped with a pilot light and/or a hand-off-automatic selector switch.

Unless otherwise indicated, the manual motor starter switches shall be equipped with NEMA 4 cast enclosure. Switches, which are flush mounted, shall be mounted with the flush box and shall have a suitable flush-mount plate.

4. Circuit Breakers

This specification shall apply to all circuit breakers furnished under this Division which are not integral to panelboards or motor control center equipment.

Circuit breakers shall be UL listed, molded case, thermal-magnetic, manually operated circuit breakers of the trip ratings shown or indicated.

Unless otherwise indicated, circuit breakers shall be 3-pole.

Unless otherwise indicated, circuit breakers shall be rated for use on 480 volt circuits.

Multi-pole circuit breakers shall have a common trip and single operating handles. Handles shall be trip free. Circuit breakers in 250 ampere frames and above shall have an adjustable magnetic trip setting.

The circuit breakers shall indicate "ON", "OFF", and "TRIPPED" conditions.

Unless otherwise indicated, circuit breakers shall have a UL listed interrupting rating of not less than 25,000 RMS symmetrical amperes at 480 volts.

Unless otherwise indicated, circuit breakers installed below grade or exposed to the weather shall have NEMA 4 stainless steel enclosures and circuit breakers installed indoors above grade shall have NEMA 12 enclosures. All circuit breakers shall have external position-indicating operating lever handles with padlock provisions.

Where indicated or where required for indicated functions, circuit breakers shall be equipped with accessories such as shunt trips, auxiliary switches, and under voltage release.

5. **Motor Starters**

This specification shall apply to all motor starters, which are provided under this Division.

Unless otherwise indicated, motor starters shall be of the combination type with integral motor circuit short circuit protection mounted in a common enclosure with the starter and control components for control of circuit as indicated. Unless otherwise indicated, motor circuit short circuit protection shall be motor circuit protectors. Motor circuit protectors shall be manually operated and shall have a magnetic trip level adjustment. Trip ratings shown on the Drawings are approximate and the trip rating provided shall be as recommended by the device manufacturer for the characteristics of each respective motor. The Contractor shall coordinate device selection with motors provided under other Divisions.

Motor starters shall not be smaller than NEMA Size I.

As a minimum, each starter shall be equipped with two normally open (NO) auxiliary contacts in addition to a starter seal-in (holding) contact. Unused contacts shall be spare.

Unless otherwise indicated, control circuits shall operate at 120 volts derived from a control transformer integral to the combination starter. The control transformer shall have a fused secondary and shall be sized adequately for the starter and all connected control devices but in no case shall the transformer be sized less than 50 volt-amperes over the capacity required to operate the starter.

6. **Control Devices**

Control devices shall be provided as part of motor starters, and also for control stations remote from motor starters and as otherwise indicated.

Unless otherwise specifically indicated, push buttons, selector switches, indicating lights and other control devices shall be of the heavy duty oil tight type.

Contact blocks for push buttons and selector switches shall have not less than one double pole double throw (DPDT) contact.

Indicating lights shall have built-in transformers, 6-volt miniature bayonet base incandescent lamps and lenses of the colors indicated. Unless otherwise indicated, indicating lights shall be push-to-test type.

Legend plates shall be provided on all oil tight control devices. Unless otherwise indicated, green indicating lights shall have "RUNNING" legend plates and legend plates for other indicating lights shall be as indicated or as selected by the Engineer.

Unless otherwise indicated, enclosures for control stations (control devices which are remote from motor starters or other equipment) which are located below grade or exposed to the weather shall be NEMA 4 stainless steel and enclosures for control stations located indoors above grade shall be NEMA 12.

7. Float Control System

The float control system shall include floats, interconnecting integral cable of a length required, and control logic for the functions indicated. Except as otherwise indicated, float control systems shall conform to the specifications elsewhere herein for float switch Installation.

Floats shall consist of sealed mercury switches sealed in stainless steel spherical floats, with integral neoprene jacketed cable.

The system shall be intrinsically safe for Installation in the wet well.

The system shall be complete with control logic to produce the contact control and alarm functions indicated or furnished by the Engineer.

Float control systems furnished as part of separately-paid float pumps shall be equipped with 2 control points via individual floats.

The system shall be complete with all required mounting hardware and accessories.

The float system shall be complete with mounting arrangement with a stilling well of adequate size, or by other means approved by the Engineer, to forestall the attachment of large sections of ice to the floats during cold weather which could then disturb the system mounting. The mounting arrangement shall permit easy removal of the floats and easy realignment when replaced. Submit details for approval by the Engineer prior to Installation.

8. Meters and Instruments

Meters and instruments applied to mains or panels as a whole, such as ammeters and voltmeters shall be switchboard type, black on white, approximately 114mm (4.5 inches) square with 1% accuracy zero adjustment and 250-degree scales. Where scale ranges are not indicated, scales shall be selected such that full scale is adequate for the range of readings possible and nominal expected readings will be at roughly half of full scale.

Ammeters for individual compartments shall be nominally 63.5mm (2.5 inches) square or round, analog meters with accuracy of 2% or better, with scale ranges matched to the starter current. Damping shall be appropriate for current. Where indicated, ammeters shall be of the meter relay type with at least one adjustable set point. Meter cases shall be compatible with motor control center construction specified.

Meter and instrument transfer switches shall be instrument-grade, multi-position, control switches having pistol-grip handles. Voltmeter selector switches shall be 7-position. Ammeter selector switches shall be 4-position. All switches shall have an off position.

Elapsed time meters shall be approximately 63.5mm (2.5 inches) square or round with suitable flush mounting flange, reading in hours and tenths of hours. The meters shall be non-reset type.

Potential transformers and current transformers for meters and instruments shall be fully compatible with associated instrument scales and accuracy. When no other indication is given, 3 potential transformers shall apply for voltage metering. A single phase current transformer may be used for individual starter compartment ammeters, with the output also suitable for a connection as a single input to the telemetry system

Control relays shall be hermetically sealed, with convertible, high reliability contacts rates not less than 5 amperes resistive.

Synchronous motor driven, time delay relays shall have a nominal 102mm (4 inch) square face, shall be "on-delay" or "off-delay" as indicated and shall be of the range indicated. They shall be suitable for flush panel mounting. Each relay shall plug into a permanently wired molded case assembly. Time shall be set by turning a knob with a pointer on the face of the relay. The relay shall have a cycle progress pointer which will advance clockwise from the setting back to zero during timing. The relays shall have instantaneous and delayed contacts as required for the functions indicated. Unless otherwise indicated, the relays shall be for 120-volt operation.

Solid state time delay relays shall be "on-delay" or "off-delay" as indicated or may be of the convertible operation type. The relays shall have the dial range indicated and shall be complete with a permanently wired plug-in base. Where indicated, they shall be suitable for flush panel mounting, and shall then be complete with cycle progress pointer. When not indicated as being for flush panel mounting, the relays shall be suitable for internal mounting and they shall then be equipped with retaining clips to keep them secure in their plug-in sockets. They shall have contacts, as required, for the functions indicated. Unless otherwise indicated, the relays shall be for 120-volt operation.

9. Wiring Identification

All wiring shall be identified by means of color coding and wire markers as specified herein. Circuit identification shall include all color coding requirements of the NEC, with particular attention directed to Article 210-5.

All wiring shall be tagged with self-sticking wire markers or other markers approved by the Engineer. The tagging shall be applied at each termination and splice. The tagging shall also be applied at other locations, where indicated on the Drawings. Designations shall include the full circuit and wire designation except for terminations at a panel for which the panel portion of the circuit designation may be omitted. Markers shall be permanent, of a size recommended by the manufacturer for the respective wire size and shall be applied as recommended by the manufacturer.

Unless specifically approved by the Engineer, color coding of neutral and ground wires shall be by means of colored insulation, except where bare ground wires are indicated.

Branch circuit wiring smaller than No. 6, from panelboards, for lighting, receptacles and similar loads shall be color coded by means of colored wire insulation. Colors shall be as selected by the Contractor but a sufficient number of colors shall be used such that wiring in common enclosures is clearly differentiated and color combinations of wiring runs are Generally not repeated. Care shall be taken in the phasing of combined-neutral circuit runs. Switched legs shall be differentiated from unswitched legs of a circuit.

Control circuit wiring shall be color coded by means of colored wire insulation as follows:

"line"	:	black
neutral	:	white
ground	:	green
others	:	red, or as otherwise indicated on the drawings

Except as otherwise specified herein, wire color coding may be by means of colored insulation or colored tape, applied at each termination, splice and pull box.

10. Rigid Steel Conduit

Rigid steel conduit shall be manufactured to conform to Federal Specification WWC-58I, NEC Article 346, ANSI Specification 680.I, and UL labeled.

All surfaces, including factory-made threads shall be protected from corrosion by hot-dip or electro-galvanizing after threading. Factory threads shall be protected plastic and caps.

11. Flexible Metal Conduit

Flexible metal conduit shall be liquid-tight flexible metal conduit as defined by NEC Article 35I and shall be UL listed for wet location use.

Flexible metal conduit shall have nylon insulated throats.

Sizes through 31.8mm (1-1/4 inch) shall have a built-in copper grounding conductor, UL listed as such.

12. Rigid Nonmetallic Conduit

Rigid nonmetallic conduit shall be manufactured to conform to Federal Specification WC-I094A NEMA specification TC-2 and NEC Article 347 and shall be UL listed for exposed, encased and underground applications.

The conduit shall be "Schedule 40" with minimum wall thickness as follows:

Nominal Diameter		Minimum Wall	
MM	Inches	MM	Inches
25.4	1	3.38	.133
31.8	1-1/4	3.56	.140
38.1	1.5	3.68	.145
50.8	2	3.91	.154
63.5	2.5	5.16	.203
76.2	3	5.49	.216
88.9	3.5	5.74	.226
101.6	4	6.02	.237
127.0	5	6.55	.258

13. Conduit Fittings

Conduit couplings, elbows and nipples shall conform to the fitting specifications corresponding to their respective conduit specifications.

Locknuts, bushings, reducers, conduit plugs and similar fittings shall be galvanized or cadmium plated and shall conform to Federal Specification W-F-408.

Conduit bodies, such as used for pulling fittings or for avoiding sharp bends shall be hot dip galvanized and shall be complete with covers having self-retaining screws. Unless otherwise indicated, conduit bodies shall be cast iron alloy or malleable iron, with gaskets and matching cast metal or malleable iron.

Insulated bushings shall be malleable iron or steel complete with plastic inserts or shall be high impact resistance plastic. They shall be UL listed with a rating not less than 150 degrees C. and they shall be equipped with ground lugs where required.

Conduit hubs which are not integral to a box or fitting shall be malleable iron or stainless steel and shall have nylon-insulated throats, neoprene o-rings, and shall be positively grounded and watertight.

14. Pull Boxes

Boxes shall be cast boxes or sheet steel boxes as indicated or specified. Each box shall be complete with a cover of the same type and material as the box except that flush-mounted sheet steel boxes for switches and receptacles shall have Type 302 satin finish stainless steel plates. Boxes shall be hot-dip galvanized. Sizes of boxes shall not be less than shown on the Drawings, and shall otherwise conform to NEC requirements as a minimum except that boxes shall not be less than 101.6mm (4-inches) square by 50.8mm (2 inches) deep.

15. Cast Boxes

Cast metal boxes shall be gray-iron alloy free from defects such as voids and shrinkage cracks, complete with covers having neoprene gaskets. Cast aluminum boxes shall not be used.

16. Raceway Installation

Except where otherwise indicated or specified, raceways shall be rigid steel conduit.

No conduit smaller than 19.1mm (3/4-inch) diameter trade size shall be used unless specifically indicated. Wherever no conduit size is shown on the Drawings, the conduit size shall be taken to be 19.1mm (3/4-inch) diameter.

Conduit runs shall have no more than 270 degrees of bends (the equivalent of three 90 degree bends) between pull points. Bends may be either factory-made bends or field bends using suitable bending apparatus.

Wherever possible, conduits shall be installed with a slight pitch to drain to the nearest box or fitting.

Threaded raceway joints shall be made with a conductive compound applied to the male threads. Threads shall be made to avoid butting and to avoid exposed threads. In no case will running threads be allowed.

Conduit reducers shall be provided as required for conduit terminations at equipment.

Myer's hub or equivalent type as specified by the Engineer shall be used for all conduits terminating into the junction box.

17. Flexible Conduit

Unless otherwise indicated all flexible conduit shall be liquid-tight flexible metal conduit as specified herein.

Flexible conduit shall be used for raceway terminations where vibration will be present, such as at motors, limit switches, electric damper motors, solenoid valves and the like and the length of these flexible conduit terminations shall not exceed .91M (3 feet).

All fittings used with flexible conduit shall be suitable for the conduit in conformance with the conduit manufacturer's requirements.

Flexible conduits larger than 31.75mm (1-1/4 inch) trade size shall be installed complete with suitable terminating fittings at each end.

18. Wire and Cable

The terms wire and cable as used herein and in the Drawings shall be interchangeable and shall refer to electric wire and cable conductors in conformance with the NEC.

Unless otherwise indicated, all wire and cable shall be insulated conductors as defined by the NEC.

Wire and cable shall be UL listed, new, and delivered to the site in full reels or boxes. The reels or boxes shall have tags or imprint showing the UL listing.

No wire size smaller than No. 12 shall be used unless specifically indicated.

19. Conductors

Unless otherwise specifically indicated all wire and cable shall have copper conductors conforming to ASTM B-3 or ASTM B-8 with Class B stranding.

Conductors who are No. 8 and larger shall be stranded. Conductors smaller than No. 8 may be solid or stranded.

Conductors sized No. 8 and larger shall be coated in accordance with ASTM B-33 or B-189.

20. Insulation

Wire and cable insulation shall be suitable for the conditions of the Installation and the voltage of the respective system and, unless otherwise specifically specified, all wire and cable for system operating at 480 volts or less shall be insulated for 600 volts AC and shall be rated at not less than 90 degrees C dry and 75 degrees wet.

All 600-volt wire and cable sized No. 8 and larger shall be UL listed as Type USE and RHH and RHW, VW-1, with insulation of heat and moisture ethylene-propylene rubber (EPR) resistant compound.

All 600-volt wire and cable smaller than No. 8 shall be UL listed as Type THW or THWN, with insulation of heat and moisture resistant polyvinylchloride (PVC) thermoplastic and a nylon jacket or Type XHHW with insulation of cross-linked polyethylene compound, except that all such writing on the project shall be of the same type.

21. Wire and Cable Installation

Wires and cables shall be carefully installed to avoid damage to insulation and cable jackets.

Wire lubricant shall be used when pulling wires into conduits. The lubricant shall be non-injurious to conduits, conductors, insulations or jackets and the lubricant shall be UL listed. Documentation shall be submitted to confirm suitability of the lubricant for the cables used on the project.

Each run of cable shall have sufficient slack.

Where a number of wires are trained through a box, manhole or handhole, they shall be grouped by circuit where applicable and bundled using appropriate cable ties and supported to minimize pressure or strain on cable insulation.

Wire and cable shall not be bent to a radius less than the manufacturer's recommended bending radius, either in permanent placement or during Installation.

Cable pulling apparatus shall have no sharp edges or protrusions, which could damage cables or raceways.

22. Piping and Appurtenances

The work specified herein includes furnishing and installing all piping and accessories required for a complete and satisfactorily working Installation as shown on the drawings and as specified herein.

All piping shall be Generally arranged and aligned in accordance with the proposed drawings prepared by the Contractor and as specified. Where special conditions are encountered in the field, the arrangement and alignment of piping shall be as directed by the Engineer.

Piping shall be installed as directly as possible between connecting points insofar as the work of other trades permit. Where interference occurs with another trade whose work is more difficult to reroute, the Contractor shall revise the routing as required to avoid subject interferences. Piping shall be carefully installed to provide for proper alignment, slope and expansion.

To allow for expansion and contraction, pipe shall be guided and supported in such manner that pipe lines shall not creep, sag or buckle. Anchors and supports shall be provided wherever necessary to prevent any misalignment of piping. Pipe support shall not be limited to support indicated on the drawings.

For underground piping, where changes in direction occur and wherever else required, piping shall be anchored to prevent blowouts or creep from either exterior or interior stresses at pipe joints. Allowance shall be made whenever necessary for any future settlement of pipe lines to insure the required pitch and avoid pocketing.

Small tubing to gauges, controls, or other equipment, installed on any apparatus shall not be coiled nor excessive in length but shall be installed neatly, carefully, bent at all changes in direction, secured in place and properly fastened to equipment at intervals to prevent sagging.

Prior to the start of any piping Installation work, the Contractor shall prepare, and submit for approval by the Engineer, detailed piping Installation drawings. These shall be prepared on the basis of actual equipment being furnished on actual dimensions of walls, openings and other significant elements.

23. Steel Pipe

Steel pipe shall be Schedule 40, black or galvanized as indicated on the Drawings or as specified elsewhere in the specifications. Steel pipe shall be subject to the requirements of the applicable portions of the latest editions of the following standards:

A53 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
ASTM A120 Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated (Galvanized) Welded and Seamless for Ordinary Uses.

A120 Specification for pipe, steel, black and hot-dipped, zinc-coated (galvanized) welded or seamless for ordinary uses.

Steel pipe shall have flanged ends when indicated on the Drawings. Flanges for steel pipe shall be of weld neck or slip-on type. Flanges of the slip-on type shall be installed with the pipe set back from the face of the flange and the flange welded to the pipe in both front and back.

Unless otherwise indicated, flanged steel pipe shall be made up with cast iron fittings.

24. Ductile Iron Fittings

Ductile iron fittings shall be provided as indicated on the Drawings and specified herein. Ductile iron fittings shall be subject to the requirements of the applicable portions of the latest editions of the following standards:

A21.10 Ductile-Iron Fittings, 76.2mm (3-in.) through 1.22M (4 feet) for Water and Other Liquids.

25. Flanged Connections

Flanged connections shall be made as indicated on the proposed Drawings prepared by the Contractors and as specified herein. All flanges shall be drilled in conformance with the 125/150 ANSI Standard template.

Class 68.0 kg (150 pound) steel flanges shall be smoothed finished (flat faced) for connection to dissimilar metals such as cast iron.

Flanged connections shall be assembled with full face rubber gaskets using ASTM A307, Grade B, hex head machine bolts.

26. Wall Castings

Cast iron wall castings shall be furnished and installed for all storm water piping passing through walls, as shown on the drawings.

Wall castings shall be flanged at both ends with flanges to fit flush to surface. Flanged ends shall be tapped for studs with drilling to conform to the American Cast Iron Flange Standard, Classes 125 (B16.1).

All wall castings shall be furnished and installed with centrally located intermediate wall collars to provide watertight construction by increasing resistance to seepage. Wall castings to be set in the form with the bolt holes in the flanges straddling the center lines - both horizontally and vertically.

27. Wall Sleeves

Wall sleeves shall be cast iron and schedule 40 galvanized steel pipe as called for on the drawings. Sleeves shall be sealed with modular type wall seals.

28. Wall Opening

The Contractor shall determine the required inside diameter of each individual wall opening or sleeve before opening shall be sized as recommended by the manufacturer to fit the pipe and Link-Seal to assure water-tight joint.

29. Sleeve Couplings

Sleeve type couplings for steel pipe shall be dresser type with center stop removed or approved equal.

30. Flap Valves (Flap Gates)

The Flap Valve, size as indicated in the Pay Item, shall be flange-framed with a resilient seat. It shall be specifically designed for pump discharge service.

The body shall be cast-iron ASTM A126-B. The flange shall be faced and drilled 125 lbs, standard for all pipe flange mounting.

A resilient seat, neoprene on Burna-N shall be bonded in a groove machined in the body to provide a wide contact surface for the seat machined in the cover.

The cover, or flap, shall be cast iron, ASTM A126-B with spherically dished design to withstand maximum operating loads. Severe pump discharge applications may require high-test cast-iron, ASTM A126-C, or ductile iron, ASTM A536 for the cover as recommended by the manufacturer.

The hinge arms shall be high-tensile bronze ASTM B584-CA865. The hinge pins, designed in double shear, shall be silicon bronze, ASTM 898-CA655 or Type 304 stainless steel. Each hinge arm shall have two pivot points, an adjustable lower pivot with limited rotation and a threaded upper hinge post to adjust flap valve sensitivity. A lubrication fitting shall be supplied for each pivot.

An anti-locking bar, between the hinge arms, shall be provided to prevent excessive rotation about the lower hinge pin.

A steel leaf spring attached to the body and extended over the cover shall be provided to safely limit the travel of the cover during "pump discharge" operation. A rubber pad shall be provided at the spring to cover the contact point.

SURVEILLANCE AND DYNAMIC MESSAGE SYSTEMS NON-ROUTINE PAY ITEMS:

SB01 8" LED BEACON, FLASHING, LOW MOUNT, 1 FACE

Description. This item shall conform with sections TSC T401#1, T412#1, and T426#1 of the Recurring Special provisions for Traffic Surveillance and Vehicle Traffic Control Signal Heads- Light Emitting Diode (LED) Circular Signal Supplement June27, 2005 and except as revised herein. This item shall consist of installing two (2) low mounted eight inch LED yellow flashing beacons on an existing post as shown on the plans or directed by the TSC Engineer. This item shall include furnishing and installing a two (2) 8" Yellow LED single section heads, flasher controller in the cabinet, required by the TSC Engineer, and all other incidentals necessary to complete the installation. The basis of payment is each for furnishing all equipment and labor necessary to complete the installation. The item shall not include the underground conduits, trench and backfill or the cable between the service installation and the base of the flashing beacon. These items will be paid separately.

Basis of Payment. This work shall be paid at the contract unit price each to 8" LED BEACON, FLASHING, LOW MOUNT, 1 FACE, FURNISH AND INSTALL as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SC03 CABINET, TYPE 3, FOR SURVEILLANCE

Description. This item shall consist of furnishing and installing a new type 3 (III) cabinet at an existing surveillance installation and shall include wiring and re-installation of equipment from existing cabinet to a new cabinet.

The components of the expressway monitoring cabinet shall consist of where applicable a flasher controller. It shall be solid state. It shall consist of two components: A base, which is mounted on the ramp metering, control cabinet wall, and the flasher which plugs into and is secured to the base by a loading screw. A radio interference filter shall be supplied with the flasher controller. The flashing beacons shall flash alternately at the rate of not less than fifty (50) nor more than sixty (60) flashes per minute. Ramp metering cabinet shall have a signal load relay installed. The signal load relay shall consist of two components, a base, which is mounted on the E.S.P. Type 3 cabinet wall, and a signal load relay which plugs into and is secured to the base by locking screw. The coil of this relay shall be connected to the mark output of the signal change tone receiver. The one set of contacts of the load relay shall be used to change the ramp signal and one set of contacts shall be used to key the mark input to the signal change transmitter. Telemetry mounting frame with frame mounting hardware. All cabinets shall be fitted with a fused thermostatically controlled fan. It shall be mounted at the top of the cabinet for a forced air fan system that has a screened air exhaust opening under roof overhang and no opening in top of cabinetry. The fan shall be capable of operating at 130 cfm.. at .160" of water static pressure

Cabinets shall be supplied in sizes with minimum inside dimensions listed below:

<u>TYPE</u>	<u>HEIGHT</u>	<u>WIDTH</u>	<u>DEPTH</u>	<u>THICKNESS</u>	<u>MATERIAL</u>
ESP 3	49-1/2"	30"	17"	3/16"	Fabricated Aluminum

This cabinet shall be watertight. Doors shall be gasketed to provide a waterproof seal. Bases shall be caulked to obtain a moisture-proof bond, and replacement cabinets will be re-numbered with cabinet replacement numbers to match location.

Materials shall conform to controller cabinets as listed in the Standard Specifications for Road and Bridge items, 1085.47 except that the door shall not have any outside designation nor shall the cabinet door be equipped with a police door or louvers.

Installation shall conform to applicable portions of Section TSC T637#2 of the Traffic Surveillance Specifications.

Cabinets, shall be primed and painted in accordance with Section TSC T712#1 of the Traffic Surveillance Specifications. The final coat and color shall be as directed by the Engineer.

All cabinets shall be serviced by 117 volts AC power and a telecommunication system. Each cabinet shall be equipped with a 10 ampere circuit breaker, ground rod, 115 VAC RF1 filtering surge protector (SHP-6LC Surrestor), 130 volt, 70 joules, 10 amp varistor lighting protection for each leg of the four (4) wire telecommunication system (SRA 64 C Surrestor), 130 volt, 70 joules, 10 amp varistor, lighting protection for each loop (SRA-6LC Surrestor), data line protection for each leg of the four (4) wire telecommunication system (SRA 64C Surrestor).

It will also be equipped with Handy Boxes, with G.F.I. duplex outlet and a pull chain lampholder with an A.C. outlet.

No holes shall be drilled through the cabinet exterior for internal equipment mounting.

Each wire entering a cabinet shall be terminated in a workmanlike manner at a terminal strip or switch. If more than one wire has a common terminal on a terminal strip, the adjacent strip shall be used and an appropriate jumpered connection shall be made.

All cables and wires entering a cabinet shall be dressed, harnessed, tied, laced and clamped to produce a workmanlike wiring installation.

A copper wire, combination grounding bus shall be mounted on the rear wall of the cabinets. All cabinets shall be furnished with a minimum of two (2) shelves per cabinet.

Basis of Payment This work shall be paid at the contract unit price each for CABINET, TYPE 3 (III), FOR SURVEILLANCE, which price shall be payment in full for furnishing and installing and all work as described herein and as directed by the Engineer.

SCP1–SCP2 DMS POWER CABINET

Description. This item shall consist of furnishing and installing cabinets of the type and size specified in place complete with meter fitting, all interior components and wiring as specified herein, shown on the Contract Drawings and as directed by the Engineer.

General Requirements. The cabinet with all of its electrical components and parts shall be assembled in a neat orderly fashion. All of the electrical cables shall be installed in a trim, neat, professional manner. The cables shall be trained in straight horizontal and vertical directions and be parallel, next to, and adjacent to other cables whenever possible. The completed controller shall be UL listed as an Industrial Control Panel under UL 508.

Cabinet:

- 3.1 Cabinets shall be of fabricated aluminum supplied in sizes with minimum inside dimensions as listed below.

TYPE	HEIGHT	WIDTH	DEPTH	THICKNESS
E.S.P.2	36"	20"	15"	3/16"
E.S.P. 3	49.5"	30"	17"	3/16"

- 3.2 Cabinets shall be watertight. Doors shall be gasketed to provide a waterproof seal. Bases shall be caulked to obtain a moisture-proof bond. All cabinets shall have Type 2 Corbin brass locks or equal.
- 3.3 Materials shall conform to controller cabinets as listed in the Standard Specifications 1085.47 except that the door shall not have any outside designation nor shall the cabinet door be equipped with a police door or louvers. Post top mounted cabinets, shall have a 1/4" bottom of cabinet welded.
- 3.4 Each cabinet shall have a circuit breaker type panelboard. Panels shall be single phase, 3-wire with separate ground bus and neutral bus with main and branch circuit breakers as indicated on the drawings. The panelboard shall have a NEMA Type 1 enclosure as a minimum.
- 3.5 All cabinets for panelboards, shall be oversized to accommodate panelboard mounted on a NEMA 1 subpanel, electric space heaters, porcelain light fixture, and controls. Ratings of heaters shall be as recommended by the equipment manufacturers and shall be so

designed and installed as to not cause any damage to components, wire insulation or cause tripping of circuit breakers from overheating.

- 3.6 Heaters and controls shall be UL listed.
- 3.7 Provide an additional circuit breaker to provide power to the heater, and porcelain base light fixture with a 3-prong 110 volt outlet.
- 3.8 Space heaters with suitable thermostats and humidistat shall be installed in each enclosure to provide against the effects of moisture and low temperatures. The space heaters shall be rated to operate on 120 volts, single phase.
- 3.9 The space heaters shall be controlled from a "HAND-OFF-AUTO" selector switch, thermostat, and humidistat, all wired in parallel in the "AUTO" position and they shall be by-passed in the hand position. The thermostats shall have a 35 degrees F minimum setting. The humidistat range shall be 20 percent to 80 percent, 3 percent differential.
- 3.10 Heaters and controls shall be so arranged and installed to eliminate any exposed live parts thereby preventing any shock hazard.
- 3.11 Each cabinet shall be provided with 100 amp meter socket for ComEd's meter.
- 3.12 Type III cabinet shall be pad mounted with meter fitting attached to the cabinet.
- 3.13 Type II cabinets shall be pedestal mounted with meter fitting attached to the cabinet. Mounting hardware, post, base, and wiring shall be considered incidental to the item.

4. CIRCUIT BREAKERS

- 4.1 All feeders, branch circuits, and auxiliary and control circuits shall have overcurrent protection. Unless otherwise indicated, the overcurrent protection shall be by means of circuit breakers.
- 4.2 Unless otherwise indicated, circuit breakers shall be standard UL-listed molded case, thermal-magnetic bolt-on type circuit breakers with trip-free indicating handles.
- 4.3 Unless otherwise indicated, circuit breakers shall have a UL-listed interrupting rating of not less than 10,000 ms symmetrical amperes at rated circuit voltage for which the breaker is applied.
- 4.4 Multi-pole circuit breakers larger than 100 ampere size shall have adjustable magnetic trip settings.
- 4.5 The number of branch circuit breakers shall be as indicated on the Control Cabinet detail drawing.

5. WIRING AND IDENTIFICATION:

- 5.1 Unless otherwise indicated, power wiring within the cabinet shall be of the size specified for the corresponding service conductors and branch circuits and shall be rated RHH/RHW, 600 volts.
- 5.2 Unless otherwise indicated control and auxiliary circuit wiring shall be rated RHH/RHW or MTW with jacket. 600 volts
- 5.3 Unless otherwise indicated, all power and control wiring shall be tagged with self-sticking cable markers and shall be standard copper. If the contract drawings do not specifically

indicate assigned wire designations, the manufacturer shall assign wire designations and indicate them on the shop drawings.

- 5.4 All switches, controls and the like shall be identified both as to function and position (as applicable) by means of engraved 2-color nameplates attached with screws, or where nameplates are not possible in the judgment of the Engineer, by the use of cloth-backed adhesive labels as approved by the Engineer.

6. INSTALLATION

- 6.1 Installation shall conform to applicable portions of Section 863 of the Standard Specifications.
- 6.2 Cabinets, cabinet posts and cabinet pedestals shall be primed and painted in accordance with the TSC Specification T712#1. The final coat color shall be as specified by the TSC at the time of the pre-construction meeting. Interior of all cabinets shall be painted high gloss white.
- 6.3 All cabinets and wiring entering a cabinet shall be dressed, harnessed, tied, laced and clamped to produce a workmanlike wiring installation.
- 6.4 All power cables shall be labeled with a Panduit type cable tag. The tag will identify the type of cable and the destination.
- 6.5 A copper ground bus shall be mounted on the rear wall of the cabinet.
- 6.6 Each cabinet shall contain a wiring diagram of the installation in addition to the diagrams which are to be submitted to the Engineer.
- 6.7 Prior to the wiring of the cabinet, the Contractor shall submit a box print for approval before cabinet wiring shall begin.
- 6.8 The Contractor shall furnish three (3) diagrams of the internal and external connections of the equipment in each cabinet. He shall furnish the operating and maintenance instructions for all equipment supplied. One copy of the wiring diagram for each cabinet shall be retained in each field cabinet. Wiring diagram shall be contained in a plastic pouch that shall be permanently mounted to the door of each cabinet. Contractor shall permanently mark the cabinet for each termination.
- 6.9 Cable harnesses, terminal boards, and mounting hardware shall be installed as needed.

Method of Measurement. Cabinets will be accepted as concrete foundation mounted, pole mounted, pedestal mounted, or attached to structure. Each cabinet installed complete and in place will be counted as a single unit.

Basis of Payment. This work will be paid at the contract unit price (each) for DMS POWER CABINET, size specified, installed complete and in place.

SCP1 DMS POWER CABINET TYPE 2 WITH METER

SCP2 DMS POWER CABINET TYPE 3 WITH METER

SD01 DETECTOR LOOP SENSOR UNIT, FOUR CHANNEL DIGITAL

Description. This item shall consist of furnishing and installing a four (4) channel digital loop detector sensor unit in an existing cabinet at the location and as directed by the Engineer.

The sensor unit shall operate on a regulated 117 VAC. The sensor unit shall be of solid state design throughout. Each sensor unit shall include two or four complete loop detector channels.

The loop connected to each of the four or two channels shall be sequentially scanned at a rate of not less than 148 times per second. Only one loop shall operate at a time in the system to eliminate cross-talk.

The digital loop sensor shall be automatically and instantaneously self-tuning requiring no burn-in or warm-up time. Then it shall also track environmental changes.

The digital sensor unit shall be self-tracking and fully automatic in its recovery from power failure.

The digital sensor unit shall be of sufficient sensitivity to detect the smallest licensable motor vehicle, including motorbikes. The sensor unit shall detect a Honda CT-170 and hold the detection for a minimum of four minutes.

The sensor unit shall be designed to operate in conjunction with three turns of a loop wire imbedded up to three inches deep in a reinforced concrete roadway.

The loop and lead-ins will measure at least 100 megaohms above ground and have a minimum inductance of 50 microhenries and a maximum of not more than 5 ohms. Digital sensor unit shall be capable of turning to an inductance of 50 microhenries and a maximum of not more than 5 ohms. Digital sensor unit shall be capable of tuning to an inductance range of 0 to 2000 microhenries.

Vehicle detection shall be indicated by a single optically insulated solid state output per channel.

Output circuit shall be an optically coupled output, which uses a coupled photo transistor. It shall be capable of switching 50 milliamperes with less than 0.7 volts drop and shall tolerate 30 volts when off.

Polarity of interface between telemetry and sensor unit must be observed.

Any size or type of motor vehicle from motorcycle to a high bed tractor-trailer moving over the loop shall be detected and each vehicle shall produce only one output for length of time the vehicle is over the loop.

Detection shall be positive for all vehicle speeds 0 to 80 miles per hour.

The sensor unit shall be capable of reliable operations when placed up to 1000 feet away from loops and connected with Canoga 30003 or equal, stranded copper wire.

The loops will vary in size from 5 feet by 6 feet up to 18 feet by 6 feet. Loop system with 100 feet of lead-in shall perform with sensitivity to detect and hold the smallest motorbike.

Detection shall not be affected by weather conditions nor shall a false detection be caused by a sudden rainstorm nearby lighting or erratic change in temperature of the sensor unit shall be from -30 degrees C to +60C. The sensor unit shall be so designed that it will be stable in operation over a very high drift range and over the entire temperature range and environmental changes. The sensor unit shall have built-in lightning protection for each channel.

Each detection channel shall have its own output indicator lamp and switch. The switch shall provide eight sensitivities, .0025% to .33% and 3 modes; off, pulse, and presence. In the pulse mode each new vehicle shall produce an output pulse of 225 millisecond duration. A vehicle remains on a loop for more than two seconds shall be "tuned out" allowing operation of the loop to other vehicle.

In the presence mode output duration shall be equal to the percent of time the vehicle is present on the loop. Vehicle detection and hold times shall not be less than 30 minutes.

Electrical connection from the sensor unit to incoming and outgoing circuits shall be made by one MS type multiple positive connection plug and jack, or equivalent arrangement, to permit rapid replacement with similar existing units without disconnecting or reconnecting individual wires.

All tuning adjustments shall be made with controls provided on the sensor unit without requiring movement of the sensor unit. These controls shall be identified and it shall not be necessary to remove or change wires or contacts nor to use any tools other than a screwdriver in tuning or making sensitivity adjustments.

A properly tuned sensor unit shall detect all high vehicles (truck with chassis 4 feet above pavement) with one contact closure and yet shall not detect vehicles passing in lanes adjacent to loop installation.

All transistors shall be silicon types. The main logic of the unit shall be a single MOS-LS1 chip to simplify the electronics, increase reliability and improve maintainability. All IC chips will be socketed.

The sensor unit shall be contained in a rigid high quality metal enclosure providing complete protection to all components and electrical connections.

During normal detection operation the state of the output indicator shall correspond exactly to the state of the output.

A frequency switch shall be provided to raise or lower the loop oscillator frequency for the elimination of cross-talk between sensor unit, should it ever occur.

The digital sensor unit shall be provided with a circuit breaker.

Special circuitry shall be provided so that the sensor unit shall continue in proper operation even though the induction loop is shorted or leaking to the ground.

Induction loops shall be coupled to a transformer to provide for rejection of induction loop lead-in cable noise and shall allow low inductance operation (0 to 50 microhenries).

A reset shall be provided to reset all channels.

There shall be a write-on pad mounted on sensor to identify traffic lane with channel indication.

Basis of Payment. This item shall be paid at the contract unit price each for DETECTOR LOOP SENSOR UNIT, FOUR CHANNEL DIGITAL, channels specified, furnished and installed, operating and completely in place. Terminal boards, cable harness wiring and miscellaneous will not be paid separately, but shall be considered as incidental to the cost of the item.

SD02 DETECTOR LOOP SENSOR UNIT, TWO CHANNEL DIGITAL

Description. This item shall consist of furnishing and installing a two (2) channel digital loop detector sensor unit in an existing cabinet at the location and as directed by the Engineer.

The sensor unit shall operate on a regulated 117 VAC. The sensor shall be of solid state design throughout. Each sensor unit shall include two or four complete loop detector channels.

The loop connected to each of the four or two channels shall be sequentially scanned at a rate of not less than 148 times per second. Only one loop shall operate at a time in the system to eliminate cross-talk.

The digital loop sensor shall be automatically and instantaneously self-tuning requiring no burn-in or warm-up time. Then it shall also track environmental changes.

The digital loop sensor unit shall be self-tracking and fully automatic in its recovery from power failure.

The digital loop sensor unit shall be of sufficient sensitivity to detect the smallest licensable motor vehicle including motorbikes. The sensor unit shall detect a Honda CT-170 and hold the detection for a minimum of our minutes.

The sensor unit shall be designed to operate in conjunction with three turns of a loop wire imbedded up to three inches deep in a reinforced concrete roadway.

The loop and lead-ins will measure at least 100 megohms above ground and have a minimum inductance of 50 microhenries and a maximum of not more than 5 ohms. Digital sensor unit shall be capable of tuning to an inductance range of 0 to 2000 microhenries.

Vehicle detection shall be indicated by a single optically insulated solid state output per channel.

Output circuit shall be an optically coupled output, which uses a coupled photo transistor. It shall be capable of switching 50 milliamperes with less than 0.7 volts drop and shall tolerate 30 volts when off.

Polarity of interface between telemetry and sensor unit must be observed.

Any size or type of motor vehicle from motorcycle to a high bed tractor trailer moving over loop shall be detected and each vehicle shall produce only one output for length of time the vehicle is over the loop.

Detection shall be positive for all vehicle speeds 0 to 80 mph.

The sensor unit shall be capable of reliable operations when placed up to 1000 feet away from loops and connected with Canoga 30003 or equal, stranded copper wire.

The loops will vary in size from 5 feet by 6 feet up to 18 feet by 6 feet. Loop system with 100 feet of lead-in shall perform with sensitivity to detect and hold the smallest motorbike.

Detection shall not be affected by weather conditions nor shall a false detection be caused by a sudden rainstorm nearby lighting or erratic change in temperature of the sensor unit shall be from -30C to +60C. The sensor unit shall be so designed that it will be stable in operation over a very high drift range and over the entire temperature range and environmental changes. The sensor unit shall have built-in lightning protection for each channel.

Each detection channel shall have its own output indicator lamp and switch. The switch shall provide eight sensitivities, .0025% to .33% and 3 modes; off, pulse, and presence.

In the presence mode output duration shall be equal to the percent of time the vehicle is present on the loop. Vehicle detection and hold times shall not be less than 30 minutes.

Electrical connection from the sensor unit to incoming and outgoing circuits shall be made by one MS type multiple positive connection plug and jack, or equivalent arrangement, to permit rapid replacement with similar existing units without disconnecting or reconnecting individual wires.

All tuning adjustments shall be made with controls provided on the sensor unit without requiring movement of the sensor unit.

These controls shall be identified and it shall not be necessary to remove or change wires or contacts nor to use any tools other than a screwdriver in tuning or making sensitivity adjustments.

A properly tuned sensor unit shall detect all high vehicles (truck with a chassis 4 feet above pavement) with one contact closure and yet shall not detect vehicles passing in lanes adjacent to loop installation.

All transistors shall be silicon types. The main logic of the unit shall be a single MOS-LS1 chip to simplify the electronics, increase reliability and improve maintainability. All IC chips will be socketed.

The sensor unit shall be contained in a rigid high quality metal enclosure providing complete protection to all components and electrical connections.

During normal detecting operation the state of the output indicator shall correspond exactly to the state of the output.

A frequency switch shall be provided to raise or lower the loop oscillator frequency for the elimination of cross-talk between sensor unit, should it ever occur.

The digital sensor unit shall be provided with a circuit breaker.

Special circuitry shall be provided so that the sensor unit shall continue in proper operation even though the induction loop is shorted or leaking to the ground.

Induction loops shall be coupled to a transformer to provide for rejection of induction loop lead-in cable noise and shall allow low inductance operation (0 to 50 microhenries).

A reset shall be provided to reset all channels.

There shall be a write-on pad mounted on sensor to identify traffic lane with channel indication.

Basis of Payment. This item shall be paid at the contract unit price each for TWO (2) CHANNEL DIGITAL LOOP DETECTOR SENSOR UNIT, channels specified, installed, operating and completely in place.

Terminal boards, cable harness wiring and miscellaneous will not be paid separately, but shall be considered as incidental to the cost of the item.

SD03 DETECTOR LOOP ROUND, SQUARE, OR RECTANGULAR

Description. This item shall consist of furnishing, installing and testing an induction loop, of the dimensions shown on the plans or of the dimension from Table 1, at the locations shown. The induction loop shall be installed in accordance with all applicable portions of article 847 of the standard specification for Road and Bridge. All saw cutting, cable installation, joint sealing, lead-ins and testing necessary to complete the installation shall conform with the following requirements.

Materials. The cable used for induction loop shall be No 14-7 strand XHHW XLP-600V. Encased in orange Detect-duct tubing as manufactured by Kris-Tech Wire Company, or comparable. Lead-ins shall be Conoga 30003 or equal cable.

Joint sealer (Dozseal 230) shall have sufficient strength and resiliency to withstand stresses set up by vibrations and differences in expansion and contraction due to temperature changes. Adhesion to clean dry, oil-free Portland Cement concrete shall be at least equal to the tensile strength of the concrete. The joint sealer, with qualities described above, shall be capable of curing in a maximum time of 30 minutes at all temperatures. Curing shall be defined as the capability of withstanding normal traffic loads without degradation.

Installation Details. Slots in the pavement shall be cut with a concrete sawing machine in accordance with the applicable portions of Section 420.10 of the Standard Specifications for Road and Bridge Construction. The slot must be clean, dry, and oil-free. Wire shall be inserted in the pavement slot with a blunt tool which will not damage the insulation and wedges made of loop tubing "Deteca-duct" will be installed at eighteen (18) inch intervals to keep new loops from floating. Loops should not be installed at an outside temperature below 50F (10C) degrees unless directed by Engineer.

Plastic sleeving shall be used to insulate the wire where loop wire crosses cracks and joints in the pavement. The sleeving shall be properly sealed with electrical tape to prevent joint sealer from entering sleeves. Sleeving shall extend a minimum of 8 inches each side of joint.

All mainline loops shall be round, six(6) feet in diameter, and centered in traffic lanes unless designated otherwise by the Engineer.

The Contractor shall core drill a six foot diameter round induction loop. The width of the drill portion shall be .500", the depth shall be a maximum of 2.75". A saw cut (home run) .375 in width and the same depth as the drilled portion shall be cut to the core hole. The core hole will be a minimum 2 ½" diameter and drilled to a depth to meet the installed P-duct. At the point where the 6' diameter loop intercepts the straight cut (home run) the wire leaving the loop will have a minimum of a 1.5" radius entering the straight cut. Interception point of home run slot and round loop shall not be cored.

Induction loops on exit and entrance ramps as well as speed/count stations shall be square or rectangular with edges perpendicular or parallel to traffic flow. Induction loops shall be centered on all ramps and in traffic lanes unless designated otherwise on the plans or by the Engineer. Traffic lanes shall be referred to by number and loop wire shall be color-coded and labeled accordingly.

A chart, which shows the coding for each installation, shall be included in each cabinet. No core holes shall be allowed at corner of any loop. Sawcuts for all induction loops and lead ins shall not be greater than 2.75 inches in depth.

All excess joint sealer shall be removed so that the level of the sealer in the saw cut is at the same level as the adjoining pavement.

All excess joint sealer shall be removed so that the level of the sealer in the saw cut is at the same level as the adjoining pavement.

All induction loops shall contain a minimum three (3) turns of No. 14 wire. Each induction loop shall have its own Canoga 30003 or equal home run or lead-in to the cabinet. Induction loops shall not be connected in series with other loops. This wire shall be free from kinks or any insulation abrasions. The loop lead-in shall be barrels sleeved, crimped, soldered and protected by heat shrinkable tubing to the loop #14 wire. Lead-ins shall be placed in such a manner that they take the most direct route to the cabinet.

Lead-in cable Canoga 30003 or equivalent will only be installed where the lead in length from point of interception to the point of termination exceeds 150 feet (45.75m).

Where lead-in runs are less than 150 feet (45.75m), the loop wire will be utilized as lead-in to the point of termination w/o splices, being twisted 5 turns per foot (304.8mm). The loop wire will be paid as "lead-in" from last point of saw cut in pavement at dive hole to point of termination in cabinet.

Loop lead-ins placed in handholes shall be coiled, taped and hung from hooks on the sides of the handhole to protect against water damage. Any other method of installation will require prior written approval of the Engineer. Each loop lead-in shall be color coded and tagged at the core hole, in each junction box it passes through and at the termination point in the cabinet.

Slots shall be cut so that no bends greater than 50 degrees is used. Diagonal saw cuts (a minimum of twelve (12) inches (304.8mm) in length) shall be used at all corners to conform with this specification. Core hole at corner or cracks shall not be allowed. The Engineer shall be contacted regarding proposed changes in loop locations necessitated by badly deteriorated pavement. The Engineer may relocate such loops.

Copper wire and lead-ins shall not be installed in the curb and gutter section or through the edge of pavement. A hole shall be drilled at least 12" (304.8mm) in from the edge of pavement through which the P-duct, loop wire and lead-in shall be installed. Saw cuts through shoulders to core hole shall not be allowed. loop lead-ins shall not be allowed in saw cuts in shoulders.

Ramp Loop Table (1)

<u>W (FT.) (m)</u>	<u>S (FT.) (m)</u>
12 3.7m	8 2.4m
13 4.0m	9 2.8m
14 4.3m	10 3.1m
15 4.6m	11 3.4m
16 4.9m	12 3.7m
17 5.2m	13 4.0m
18 5.5m	14 4.3m
19 5.8m	15 4.6m
20 6.1m	16 4.9m
21 6.4m	17 5.2m
22 6.7m	18 5.5m
23 7.0m	19 5.8m
24 7.3m	20 6.1m
25 7.6m	21 6.4m

*EXAMPLE: Where lane width (W) is 12' (3.66m), loop width(s) shall be 8' (2.44m), Length of loop shall be determined by location.

Should the induction loop and/or core hole for the induction loop and loop lead-in cable be paved over by other construction operations, it shall be the contractor's responsibility for locating and finding the induction loop and/or the core hole for the repair of a bad loop or lead-in or for the installation of a new loop or loop lead-in. The locating of the core hole and the induction loop shall be incidental to the cost of the induction loop lead-in installation.

Traffic Systems Center
 Loop Splicing Requirement

<u>Mainline Loops</u>	<u>Metering Loops</u>	<u>Speed Count</u>
Lane 1 - Blue	Loop 1 - Green - Input Loop	Lane 1 - Blue
Lane 2 - Brown	Loop 2 - Yellow - Demand Loop	Lane 2 - Brown
Lane 3 - Orange	Loop 3 - Red - Passage loop	Lane 3 - Orange
Lane 4 - Violet		Lane 4 - Violet
Lane 5 - Slate		

Lane 1 being the left lane in direction of traffic flow for mainline and ramps.

When 2 or 3 loops are installed on an exit or entrance ramp the loop color code shall conform to the mainline loop color code and shall be marked as entrance or exit ramp loops.

Only Speed/Count Station loops both square and rectangle shall be color coded and tagged by lane per specific locations as noted on plans, or as directed by the Engineer.

In addition to color codes each loop shall be identified with a written label attached to the loop wire, or lead-in wire. The tags shall be Panduit #MP250W175-C or equivalent. All wires and cables shall be identified in each handhole or cabinet the cable passes through, or terminates in. The labels shall be attached to the cable by use of two cable ties.

An electronic test instrument capable of measuring large values of electrical resistance such as a major megger, shall be used to measure the resistance of the induction loop and its lead-in shall be a minimum of 500 megohms above ground under any conditions of weather or moisture. The loop and the loop lead-in shall have an inductance between 50 microhenries and 1000 microhenries. The continuity test of the loop and loop lead-in shall not have a resistance greater than five (5) ohms. Testing shall be done with the required loop tester.

Loop wire and lead-ins shall not be installed in the curb and gutter section or through the edge of pavement. A hole, 2-1/2" shall be drilled at least 12" in from the edge of pavement through which the P-Duct, loop wire, and lead-in shall be installed.

Method of Measurement. A loop is considered by lineal feet plus lead-in into the dive hole.

Basis of Payment. This work shall be paid at the contract unit price per lineal foot for DETECTOR LOOP ROUND, SQUARE, OR RECTANGULAR of the size, number and type as specified, which shall be payment in full for the work described herein. The contract shall be paid lineal feet for the loop, plus the lineal footage for the home run straight cut to the core hole. The cost of expressway lane closure and miscellaneous cost shall be incidental.

SD04 BLUE TOOTH TRAFFIC DETECTOR

Description. This item shall consist of retrieving from the Owners storage facility, loading, and installing a Blue Tooth Traffic detector on a light pole, sign truss, as specified herein, at locations designated by the Engineer.

Mounting Requirement. The Contractor shall provide the banding and any other miscellaneous mounting hardware required to attach the sensor and solar collector to the light pole, sign truss, or other structure as directed by the Engineer. The Contractor shall replace the harness that connects the Solar panel to the Blue Tooth detector enclosure. The cost to replace the solar panel harness shall be included in the cost of the pay item.

Basis of Payment. This item shall be paid for at the contract unit price each for Blue Tooth Traffic Detector which shall be payment in full for installing the item as described herein.

SDM1 DMS FRONT ACCESS, FULL MATRIX, COLOR, NTCIP 1203 V2

1.0 General Requirements

This specification shall govern the furnishing and installation of DMS Front Access, Full matrix, Color, NTCIP 1203 V2 at an existing DMS field location and associated equipment cabinets as shown in the plans and as detailed in this specification. The display shall be a full matrix configuration of **27 pixels high by 125 pixels wide**. The size of the sign shall be as shown in the plans. All display elements and modules shall be solid state. No mechanical or electromechanical elements or shutters shall be used.

Equipment to be furnished at each dynamic message sign (DMS) field site shown in the plans shall include, but not be limited to the following:

LED DMS, sign controller, cabling, maintenance diagnostic software, sign enclosure, documentation, warranties, mounting hardware, etc.

The Contractor will be removing an existing DMS and replacing the existing DMS sign with the new Full matrix DMS and installing the new Auxiliary Control equipment in the existing DMS Control cabinet.

The removal of the existing DMS sign and control equipment shall be considered incidental to this item. Certain control boards and display modules will be salvaged and returned to State Stock. The Engineer will determine which boards are salvage and which items are scrap. The DMS sign housing will be considered scrap and not returned to State Stock. There will be no additional compensation for removal and salvaging of control boards or display panels. The cost of removal and salvage of these items shall be considered incidental to the cost of this pay item.

Latest vendor diag. software w/20 licenses to load software on Department/Department's maintenance forces laptops.

The Central Controller resides at the Traffic Systems Center. The DMS Central Software was developed by 360 Surveillance, Inc. The successful sign vendor shall perform an on-site working sample demonstration test to prove their product is compatible with the 360 Cameleon Client/Server Software. The Working Sample demonstration test criteria is outlined in Section 2.0 of this document.

Each DMS assembly shall consist of a LED DMS sign case including contents, mounting brackets, its associated sign controller unit (SCU), and communication unit, cabling between the DMS case and the sign controller unit, , opto-coupled interface from controller to sign, and DMS walkway platforms with permanent safety and mounting brackets and hardware.

Each LED DMS shall be capable of displaying three lines of text. Each line shall consist of a string of 18 alphanumeric characters. Each character shall be composed from a luminous dot matrix system. The matrix system shall consist of 35 dots composed of 5 columns and 7 rows. There shall be an appropriate blank spacing between each 5 by 7 matrix for maximum readability at various distances. A luminous pixel shall consist of a LED pixel array. All display elements and modules shall be solid state. No mechanical or electromechanical elements or shutters shall be used.

All characters, symbols, and digits shall be 18 inch nominal character size and shall be clearly visible and legible at a distance of 900 feet within a 30 degree cone of vision centered around the optical axis of the pixel.

The signs shall be capable of displaying the following:

- A static message
- A flashing message
- Two alternating messages, either flashing or static

The changing from one message to another shall be instantaneous.

The total weight added to the sign structure shall be no greater than 2200 pounds. The dimensions of the sign housing will not exceed 8'0" tall, 30'0" wide, and 1'6" deep and access to the electronics shall be achieved through the front display panels of the DMS. Larger signs may be submitted, but they will require additional review time to evaluate the structural adequacy of the Department's standard sign trusses.

The Contractor shall provide structure mounted service equipment to provide power to each sign. The cost of this shall be considered incidental to the unit price for the DMS.

The Contractor shall gut the existing DMS Control cabinet to mount the new DMS Auxiliary Control Panel. Any additional materials needed to mount the Auxiliary Control Panel shall be considered incidental to this item.

The Contractor shall be responsible to have a Licensed Structural Engineer in the State of Illinois design the new sign attachment to the existing DMS sign truss and stamp the drawings. These drawings shall be submitted to the Engineer for approval before work can commence. These drawings will describe the mounting required to attach the new DMS to the existing Structure. Shop drawings for the structures may be available upon request. The contractor shall supply all mounting hardware necessary to attach the New DMS to the existing structure. The cost of this work shall be included in the contract bid price for the item. No additional compensation will be allowed for any modifications that maybe required to the existing structure.

All field equipment shall remain fully functional over an ambient temperature range of -40°F to $+149^{\circ}\text{F}$ with relative humidity of up to 95%. All field equipment enclosures shall be designed to and shall withstand the effects of sand, dust, and hose-directed water. All connections shall be watertight.

2.0 Working Sample Demonstration (Dynamic Message Sign)

To ensure timely delivery for installation, it is imperative that the DMS manufacturer be regularly engaged in the manufacture of the specified equipment and capable of immediately demonstrating a sample DMS that is in clear compliance with the key portions of the specifications. Delay from the specified timeline, and failure to present the sample in a timely manner may result in termination of the contract, at the discretion of the Engineer.

The DMS manufacturer shall provide a satisfactory, approvable demonstration of a working sample DMS within 14 calendar days after contract execution. The sample shall be a complete mock-up of a working DMS based on the proposed equipment to be furnished under this contract and identified in the submittal material. The sample demonstration may utilize a portable sample at the IDOT Traffic Systems Center, or it may be at the manufacturer's production facility if located within District 1. A demonstration of an identical installed unit for some other contract will be acceptable.

The sample demonstration will be for purposes of review and approval by the engineer. The Engineer will issue review comments based on examination of the unit and its operation at the time of the demonstration, and the Engineer may require a subsequent revised sample demonstration if, in the Engineer's judgment, the comments warrant re-work of the sample unit. Delay in presenting the specified demonstration or delay in attaining "Approved" or "Approved as Noted" status will result in cancelation of the authorization, the contractors shall pay for all costs and expenses. The Department will not be held liable for any cost whatsoever.

For a demonstration to be held at the IDOT Traffic Systems Center, the manufacturer shall coordinate the exact date, time, demonstration location, and power requirements with the Traffic Systems Center Engineer.

The sample unit shall be in substantial compliance with the contract requirements. The Engineer may elect to waive minor deviations for purposes of the demonstration, or may waive minor deviations completely if alternative provisions are judged superior to specified requirements, but deviations from key specified requirements will not be accepted.

3.0 Materials

All materials furnished, assembled, fabricated or installed under this item shall be new, corrosion resistant and in strict accordance with the details shown in the plans and as detailed in this specification. All details and functionality listed in this specification will be thoroughly inspected and tested by the department. Failure to meet all details and functionality detailed in this specification shall be grounds for rejection of the equipment.

4.0 Terminology

Due to the varying definitions used in Dynamic Message Sign technology, this section defines specific terms as they apply to this specification.

Sign: The sign housing and its contents.

Sign Controller: Located in a ground cabinet or in the sign (as detailed in this specification), the sign controller specifies the message to be displayed. Messages can be selected either remotely from the central controller, locally from a laptop computer or from the front panel of the sign controller.

Central Controller: The MS Windows Server computer system and related software, which operates the system from a remote control site.

Workstation: This computer operates as a remote client to the central controller. A workstation operator can dial-in to the central controller and gain access to the functions of the central by using the appropriate access codes.

LED: Light Emitting Diode

Pixel: Any of the small discrete elements that, when arranged in a pixel matrix, create a character. A pixel contains a cluster of LEDs.

Pitch: Distance measured from center to center of adjacent pixels within a matrix. This distance is measured both horizontally and vertically.

Poll: The central controller and laptop computer are said to “poll” a sign when they request the sign’s status information. The term is derived from the periodic status polling, which a central can perform, but is loosely used to refer to any status request.

Message: Text; the information shown on the sign.

Display: The message seen by the motorist. A display may include more than one page of text (an alternating display). Any character or set of characters of a display may be flashed (a flashing display).

Neutral State: Sign is blank, or displaying a predefined message that is displayed regularly.

WYSIWYG: What You See IS What You Get. In this specification, this is the functionality of the LED DMS system where the central, workstation or laptop display mimics the actual message that is visibly displayed on the sign on an individual pixel basis.

5.0 DMS Manufacture Requirements

The company that designs and manufactures the LED DMS shall be currently ISO 9001 certified as of the bid date for this project and shall have received its ISO 9001 certification a minimum of three years prior to the bid date for this project. The scope of this company’s ISO 9001 certification shall be for the Design, Manufacture, Installation, Maintenance and Sales of Dynamic Message Sign Systems. The facility where this company actually designs and manufactures the LED DMS shall be ISO 9001 certified. This company, this scope and the address of this facility shall all be listed on the ISO 9001 certificate. This ISO 9001 certificate shall be provided with the bid. The name, phone number and address of both the Authorized ISO 9001 Registrar that certified this company and the Authorized ISO 9001 Accreditation Body that accredited this Registrar shall be provided with the bid. Failure to fully comply with these requirements and to provide all this information will cause this company’s equipment and software to be rejected. ISO 9002 and ISO 9003 certifications are not adequate and do not meet this requirement.

Experience Requirements:

The LED DMS System Manufacturer shall submit a State Department of Transportation reference for minimum of three (3) different states that have been successfully operating a highway LED dynamic message sign system, and that completely meets these specifications, manufactured and supplied by this manufacturer, for a period of no less than five (5) years.

The LED DMS Signs and System shall be fabricated by an established DMS manufacturer having the minimum of:

- 10 years experience, under the current corporate name, in the design and manufacturing of State Highway or Interstate Highway, permanently-mounted, overhead dynamic message signs and central control systems installed in freeway service. This 10 years of experience shall include the complete design and manufacturing of all aspects of the dynamic message signs, including the electronic hardware, software and sign housings.
- 100 State Highway or Interstate Highway, permanently-mounted, overhead dynamic message signs installed in freeway service, under the current corporate name.
- 50 State Highway or Interstate Highway, permanently-mounted, overhead LED dynamic message signs that completely meet this specification with three lines of 18-inch characters and Front Access housings installed in freeway service, under the current corporate name.
- The manufacturer of the LED DMS Signs and System shall submit documentary evidence and reference data for the above requirements. Reference data shall include the name and address of the organization, and the name and telephone number of an individual from the organization who can be contacted to verify the above requirements. The name of the DMS manufacturer that meets these experience requirements shall have the same corporate name as the DMS manufacturer that meets the ISO 9001 requirements stated elsewhere in this specification. This information shall be provided prior to documentation submittal. Failure to furnish the above references will be sufficient reason for rejection of the supplier’s equipment.

- The Contractor shall submit the information described in this section to the Engineer within 15 days of award of the contract. The Engineer will review the submitted information and provide comments and approval of the information to the Contractor within 15 calendar days after receipt. Review of the submittal information by the Engineer shall not relieve the Contractor of the contractor's obligation to furnish and install the work in accordance with the contract documents. No time extensions will be granted to the Contractor as a result of the need to resubmit various items to review.
- Shop drawings shall be submitted in accordance with Article 105.04 of the Standard Specifications and as specified in these special provisions.
- Prior to purchase or fabrication of any equipment or materials for use in this project, the Contractor shall submit, for review by the Engineer, appropriate catalog cuts sheets, and specifications for all standard, off-the-shelf items and shall submit shop drawings and other necessary data for all non-catalog or custom-made items.
- The Contractor shall furnish five sets of submittal data directly to the Engineer. Two copies of this information, with appropriate notations, will be returned to the Contractor after the review.
- If reprinted literature, such as catalog cut sheets, is used to satisfy the submittal data requirements, there shall be no statements on the literature which conflict with the requirements of the contract documents. Any such statements shall be crossed off and initialed by the Contractor. Explanation of how specifications shall be met pertaining to items changed from the literature shall be documented in writing and included with the submittal information.
- All items shall be submitted together.
- Each submittal shall contain sufficient information and details to permit full evaluation of each item, and its interrelationships among the various items shall be carefully addressed.
- The Contractor shall prepare and submit detailed shop drawings for each sign type indicating types of materials proposed for each component of each sign, parts lists, assembly techniques, layout of all display elements and wiring schematics. The shop drawings shall also illustrate in detail how the Contractor proposes to mount and connect the DMS sign case to the sign support structure (truss). The DMS sign case shall include any support mechanism necessary for the installation of the DMS sign case that is not included in the truss. These drawings shall be submitted to the Engineer for review and approval prior to fabrication of any sign. Parts lists shall include circuit and board designation, part type and class, power rating, component manufacturer and mechanical part manufacturer.
- As part of the submittals for the DMS assembly, the Contractor shall submit an engineering drawing illustrating the DMS character set including 26 upper case letters, 10 numerals, a dash, a plus sign (+), and slash. The Contractor shall also submit complete technical information, shop drawings, photographs, graphs, circuit diagrams, instruction manuals, security provisions, and any other necessary documents to fully describe the DMS assembly and associated equipment.

6.0 **Product Testing**

The DMS manufacturer shall provide documentation indicating that the DMS product has been tested to the following standards. It shall be acceptable for the testing to be performed on scale-sized versions of the actual DMS provided that the test unit is functionally and structurally equivalent to the full size DMS.

Failure to conform to these testing requirements shall be grounds for rejection. Rejected equipment may be offered for test or retest provided all non-compliant items have been corrected and tested or retested by the DMS manufacturer. Any corrections deemed necessary by the Engineer shall be made by the DMS manufacturer, at no additional cost to the Department.

6.1 Third Party Testing

Third party test reports shall be submitted for the following testing:

- NEMA Standards Publication TS 4, Hardware Standards for Dynamic Message Signs (DMS), with NTCIP Requirements – Section 2, Environmental Requirements. Test report shall detail results of mechanical vibration and shock, electrical noise and immunity, temperature, and humidity.
- Underwriters Laboratories (UL), UL 48 Standard for Electric Signs, UL 50 Enclosures for Electrical Equipment, and UL 1433 Standard for Control Centers for Changing Message Type Electric Signs. The UL report number(s) for all DMS and control equipment manufactured by the DMS manufacturer shall be submitted and the products shall bear the UL mark.

The supplier shall provide a record of each test performed including the results of each test. The report shall include a record of the 3rd party test laboratory and the test lab's representative that witnessed the tests, including the signature of the lab's representative. The test reports shall be provided to the Engineer for review as part of the technical submittal.

6.2 Self Certification

The DMS manufacturer shall provide self-certification, including a statement of conformance and copies of test reports, indicating that the following tests have been performed and passed.

Third party test reports shall be submitted for testing of the following National Transportation Communication for ITS Protocol (NTCIP) standards:

- NTCIP 1201:1996, NTCIP Global Object Definitions (including Amendment 1)
- NTCIP 1203:1997, Object Definitions for Dynamic Message Signs (including Amendment1)
- NTCIP 2101:2001, Point to Multi-Point Protocol Using RS-232 Subnetwork Profile.
- NTCIP 2103 (Draft v1.13), Point-to-Point Protocol Over RS-232 Subnetwork Profile.
- NTCIP 2104 V01.11 Ethernet Subnetwork Profile

The NTCIP testing shall have been completed using industry accepted test tools such as the NTCIP Exerciser, Trevilon's NTester, Intelligent Devices' Device Tester, and/or Frontline's FTS for NTCIP. The NTCIP test report(s) shall include testing of sub-network communications functionality, all mandatory objects in all mandatory conformance groups, and a subset of the remaining objects.

7.0 **Physical Construction**

7.1 Wiring and Power Distribution

7.1.1 Power and Signal Entrances

Two threaded conduit hubs shall be located on the rear or side wall of the DMS housing. One hub shall be for incoming AC power and the other shall be for incoming DMS signal cabling or a communications line.

7.1.2 Panel Board

The DMS shall contain a power panel board and circuit breakers that meet the following minimum requirements:

- Service entrance-rated
- Minimum of 20 circuit breaker mounting positions
- Short circuit ratings of 22,000 amps and 10,000 amps for the main and branch circuits, respectively
- UL listed panel board and circuit breakers

7.1.3 Internal Wiring

Wiring for LED display module control, environmental control circuits and other internal DMS components shall be installed in the DMS housing in a neat and professional manner. Wiring shall not impede the removal of display modules, power supplies, environmental control equipment, and other sign components. Wires shall not make contact with or bend around sharp metal edges. All wiring shall conform to the National Electrical Code.

7.2 Earth Grounding

The DMS manufacturer shall provide one earth ground lug that is electrically bonded to the DMS housing. The lug shall be installed near the power entrance location on the DMS housing's rear wall. The DMS installation contractor shall provide the balance of materials and services needed to properly earth ground the DMS. All earth grounding shall conform to the National Electrical Code.

7.3 DMS Enclosure

The LED DMS shall enable the display of text, consisting of a string of alphanumeric and other characters. The size of the sign shall be as shown in the plans, and elsewhere in the specification. Each character shall be formed by a matrix of luminous pixels. The matrix of a standard character shall consist of 35 pixels over 5 columns and 7 rows.

The equipment design and construction shall utilize the latest available techniques with a minimum number of different parts, subassemblies, circuits, cards and modules to maximize standardization and commonality. The equipment shall be designed for ease of maintenance. All component parts shall be readily accessible for inspection and maintenance. Test points shall be provided for checking essential voltages.

The sign shall be designed for a minimum life of 20 years.

The sign shall be designed and constructed so as to present a clean and neat appearance. Poor workmanship shall be cause for rejection of the sign.

All cables shall be securely clamped/tied in the sign housing. No adhesive attachments will be allowed.

The dynamic message sign, including the sign housing and all modules and assemblies, shall be designed and manufactured in the USA.

The complete sign housing shall be designed and manufactured in-house by the LED DMS Sign Manufacturer.

A registered structural engineer in the State of Illinois shall analyze the DMS structure and certify that the DMS will withstand the temporary effects of being lifted by the provided eye bolts, will comply with the applicable requirements of AASHTO Standard

Specs for Structural Supports for Highway Signs, Luminaries and Traffic Signals, Fourth Draft, 2001, and will support a front face ice load of 4 lbs. per square foot.

The equipment within the sign housing shall be protected from moisture, dust, dirt and corrosion. The sign shall be constructed of aluminum alloy 5052-H32 or 3003-H14 which shall not be less than 1/8" thick, unless otherwise specified in this document. Framing structural members shall be made of aluminum alloy 6061-T6 or 6063-T5.

All welding shall be by an inert gas process in accordance with the American Welding Society (AWS) Standards, ANSI/AWS D1.2-97. The LED DMS manufacturer's welders and welding procedures shall be certified by an ANSI/AWS Certified Welding Inspector to the 1997 ANSI/AWS D1.2-97 Structural Welding Code for Aluminum. Proof of certification of all the LED DMS manufacturer's welders and applicable welding procedures shall be supplied with the submittals. The name, phone number and address of the ANSI/AWS Certified Welding Inspector that certified the LED DMS manufacturer's welders and procedures shall also be provided with the submittals.

The DMS housing's right, left, and rear walls shall be vertical. The top and bottom sides shall be horizontal.

The sign housing shall be capable of withstanding a wind loading of 120 M.P.H. without permanent deformation or other damages.

All 120/240 VAC wiring located inside the sign housing shall be run in conduit pull-boxes, handy-boxes, power supply boxes, control cabinets, and circuit breaker boxes.

The performance of the sign shall not be impaired due to continuous vibration caused by wind, traffic or other factors. This includes the visibility and legibility of the display. The presence of power transients or electromagnetic fields, including those created by any components of the system, shall have no deleterious effect on the performance of the system. The system shall not conduct or radiate signals which will adversely affect other electrical or electronic equipment including, but not limited to, other control systems, data processing equipment, audio, radio and industrial equipment.

All DMS structural hardware shall be stainless steel and appropriately sized for the application.

The DMS Manufacturer shall provide a signed and sealed copy of these certifications by the registered Structural Engineer as part of the catalog cut submittal.

7.3.1 Electronic Components

All electronic components, except printed circuit boards, shall be commercially available, easily accessible, replaceable and individually removable using conventional electronics repair methods.

All workmanship shall comply with ANSI/IPC-1-610B Class 2 titled "Acceptability of Electronic Assemblies", ANSI/IPC-7711 titled "Rework of Electronic Assemblies", and ANSI/IPC-7721 titled "Rework and Modification of Printed Boards and Electronic Assemblies".

All electronic components shall comply with Section Electronic Materials and Construction Methods, located in this document.

All Printed Circuit Boards (PCBs) shall be completely conformal coated with a 0.010 inch (10 MIL) minimum thickness silicone resin conformal coat. The LED mother boards shall be completely conformal coated, except at the pixels on the front of the PCB, with a

0.010 inch (10 MIL) minimum thickness silicone resin conformal coat. The material used to coat the PCBs shall meet the military specification: MIL-I-46058C Type SR.

7.3.2 Mechanical Components

All external screws, nuts, and locking washers shall be stainless steel. No self-tapping screws shall be used. All parts shall be made of corrosion resistant materials, such as plastic, stainless steel or aluminum. All materials used in construction shall be resistant to fungus growth and moisture deterioration. An inert dielectric material shall separate dissimilar metals.

7.3.3 Convenience Outlets

The DMS housing shall contain a utility outlet circuit consisting of a minimum of one (1) 15-A NEMA 15-R, 120 VAC duplex outlet, with ground-fault circuit interrupters. This outlet shall be located near the panel board.

If the sign controller and communication equipment is to be mounted in the sign, a second outlet circuit shall be included consisting of a minimum of two (2) 15-A NEMA 15-R, 120 VAC duplex outlets. These outlets shall be located near the controller and communication equipment mounting location.

7.4 Front Face Construction

The DMS front face shall be constructed with multiple vertically hinged rigid door panels, each of which contains a full-height section of the LED display matrix. The door panels shall be fabricated using aluminum sheeting on the exterior and polycarbonate sheeting on the interior of the panel.

The DMS housing shall provide safe and convenient access to all modular assemblies, components, wiring, and subsystems located within the DMS housing. All of those internal components shall be removable and replaceable by a single technician.

7.4.1 Doors

One (1) access door shall be provided for each 10 or 15 pixel wide section of the sign housing. These doors shall be vertically hinged and shall contain a section of the sign's front face. The doors shall swing out from the face to provide access to the cabinet interior. Each door shall extend the full height of the display matrix.

To prevent open doors from blowing in wind, they shall each have a retaining latch mechanism to hold the door open at a 90-degree angle.

Each door shall form the face panel for a section of the sign. The LED modules shall be mounted to the door and be removable from the door when in the open position. Other sign components, such as power supplies, wiring, etc. shall be located inside the sign cabinet and be accessible through the door opening. Each door shall cover an opening that is a minimum of 23-inches (584 mm) wide and the same height as the display pixel matrix.

Each door shall contain a minimum of two (2) screw-type latches to lock them in the closed position. These latches shall be captive to prevent them from falling off. They shall pull the door tight and compress a gasket located around the perimeter of each door. They shall also be capable of providing leverage to easily release the gasket seal when opening the doors. The gasket shall prevent water from entering the cabinet around the doors.

7.4.2 Face Panels

Front face panels shall provide a high-contrast background for the DMS display matrix. The aluminum mask of each door panel shall be painted black and shall contain an opening for each pixel. Openings shall be large enough to not block any portion of the viewing cones of the LEDs.

Each door panel shall have a single polycarbonate sheet attached securely to the inside of the aluminum panel. The polycarbonate sheet shall cover all of the pixel openings. The polycarbonate shall be sealed to prevent water and other elements from entering the DMS. The polycarbonate shall contain UV inhibitors that protect the LED display matrix from the effects of ultraviolet light exposure and prevent premature aging of the polycarbonate itself. Polycarbonate sheets shall have the following characteristics:

- Tensile Strength, Ultimate: 10,000 PSI
- Tensile Strength, Yield: 9,300 PSI
- Tensile Strain at Break: 125%
- Tensile Modulus: 330,000 PSI
- Flexural Modulus: 330,000 PSI
- Impact Strength, Izod (1/8", notched): 17 ft-lbs/inch of notch
- Rockwell Hardness: M75, R118
- Heat Deflection Temperature Under Load: 264 PSI at 270F and 66 PSI at 288F
- Coefficient of Thermal Expansion: 3.9×10^{-5} in/in/F
- Specific Heat: 0.30 BTU/lb/F
- Initial Light Transmittance: 85% minimum
- Change in Light Transmittance, 3 years exposure in a Southern latitude: 3%
- Change in Yellowness Index, 3 years exposure in a Southern latitude: less than 5%

LED display modules shall mount to the inside of the DMS front face door panels. Common hand tools shall be used for removal and replacement.

DMS front face borders (top, bottom, left side, and right side), which surround the front face panels and LED display matrix, shall be painted black to maximize display contrast and legibility.

In the presence of wind, the DMS front face shall not distort in a manner that adversely affects LED message legibility.

7.4.3 Exterior Finish

DMS front face panels and front face border pieces shall be coated with semi-gloss black Kynar 500 resin or an equivalent brand of oven-fired fluoropolymer coating, which has an expected outdoor service life of 20 years.

All other DMS housing surfaces, including the DMS mounting brackets, shall be natural mill-finish aluminum.

7.4.4 Heating

The lens panel shall be heated to prevent fogging and condensation. An eight watt-per-foot, self-regulating, heat tape shall be provided along the bottom of the message area, between the glazing and the display modules. The sign controller shall control the heat tape. All heat tape terminal blocks shall be covered for safety.

7.5 Humidity Control

A humidity sensor shall be provided and sensed by the sign controller from zero percent to 100 percent relative humidity in one percent or fewer increments. The sensor shall operate and survive from 0 percent to 100 percent relative humidity.

The sensor shall have an accuracy that is better than +/- five percent relative humidity. The sign controller shall read the internal temperature sensors, external ambient temperature sensor and the humidity sensor. The sign controller shall use these readings in an algorithm that turns on the heat tape and/or the fans at the appropriate times to reduce both frost on the face of the sign and condensation on the display modules and other electronic circuitry.

7.6 Drain Holes

The bottom panel of the housing shall have a minimum of four drain holes, with snap-in, drain filter plug inserts, in each section formed by internal structural members. Water drain filter plug inserts shall be replaceable.

7.7 Ventilation System

The ventilation system shall be a positive-pressure, filtered, forced-air system which cools both the display modules and the sign housing interior. The sign housing shall two exhaust ports. Each exhaust port shall be filtered and protected by an aluminum hood assembly.

The ventilation system shall have four fans. Air shall be drawn into the sign housing through hoods near the bottom of the housing, and then filtered before reaching the fan units. There shall be two aluminum hood assemblies and inlet filters.

The inlet and exhaust filters shall be electrostatic and shall be sized to properly accommodate the air flow and pressure drop requirements of the ventilation system. The inlet filters shall an Initial Atmospheric Dust Spot Efficiency of 64 at 20 cm/s in accordance with ASHRAE 52.1. These filters shall be easily removable from within the sign housing without the use of tools.

Each fan shall be capable of providing a minimum of one sign housing volume change per minute at the pressure drop developed throughout the entire ventilation system with all fans operating. The fans shall have ball or roller bearings, shall be permanently lubricated and shall require no periodic maintenance. The fans are to be positioned in such a manner so as to provide a balanced air flow to the ventilation system in the event of failure of any fan.

Adequate air flow shall be automatically tested once a day and tested on command from the central controller or laptop computer. Inadequate airflow will cause an error message to be sent to the central controller or laptop computer when the sign controller is polled by the central controller or laptop computer.

Adequate air flow shall be tested with a 100% solid state air flow detection device downstream from each fan. The entire message area shall be ventilated by an efficient forced air system. Air shall be ducted directly from the fans to the bottom of the entire message area. The air shall be directed to provide equal distribution of air to the bottom of the cavity between the lens panel and the LED modules. The air shall be exhausted out of the top of the cavity into the sign housing interior. Air flow shall be sufficient to exchange a minimum of one volume of air every eight (8) seconds in the void between each display module and the lens panel.

The air plenums shall be sealed and designed to keep any water that gets through the louvers from getting into the sign housing interior.

All duct work that impedes access to any sign components shall be easily removable, without tools, for servicing of these components.

All ductwork shall be 0.040 minimum aluminum and shall be designed to be extremely efficient with minimal pressure drop throughout the system.

Multiple temperature sensors shall activate the ventilation system. There shall be a minimum of one sensor located near the middle of the sign, at the top of the display area in the exhaust stream from the cavity between the display modules and the lens panel. There shall be an additional temperature sensor located to accurately measure the

ambient temperature outside the sign housing. The temperature sensors shall have an accuracy of +/- 1.5 degrees C. and a range from -40 to +70 degrees C.

The temperatures from the sensors shall be continuously measured and monitored by the sign controller. A temperature reading greater than a user selectable critical temperature shall cause the sign to go to blank and the sign controller shall report this error message to the central controller.

The LED modules and electronic equipment shall be protected by a fail-safe, back-up fan control system in the event of an electronic fan control failure or shutdown of the sign controller.

Alternate sign ventilation systems can be submitted to the Engineer for approval. Extra time and additional demonstration testing and documentation of the proposed alternate system may be needed to secure the necessary approval from the Engineer. No extra compensation shall be awarded to the Contractor for the alternate design but if the alternate design is rejected, liquidated damages may apply.

8.0 LED Display Modules

The DMS shall contain LED display modules that include an LED pixel array, LED driver circuitry, and mounting hardware. These modules shall be mounted adjacently in a two-dimensional array to form a continuous LED pixel matrix. Each LED display module shall be constructed as follows:

- Each LED display module may consist of one or two circuit boards. If two boards are used, they shall be mounted physically to each other using durable non-corrosive hardware. They shall be electrically connected via one or more header-type connectors. The header connectors shall be keyed such that the boards cannot be connected incorrectly.
- All LED modules shall be manufactured using laminated fiberglass printed circuit boards.
- Each LED display module shall be mounted to the rear of the display's front face panels using durable non-corrosive hardware. No tools shall be required for module removal and replacement. The modules shall be mounted such that the LEDs emit light through the face panel's pixel holes and such that the face panel does not block any part of the viewing cone of any of the LEDs in any pixels.
- LED display module power and signal connections shall be a quick-disconnect locking connector type. Removal of a display module from the DMS, or a pixel board or driver circuit board from its display module, shall not require a soldering operation.
- All exposed metal on both sides of each printed circuit board, except connector contacts, shall be protected from water and humidity exposure by a thorough application of conformal coating. Bench level repair of individual components, including discrete LED replacement and conformal coating repair, shall be possible.
- Individual addressing of the each LED display module shall be configured via the communication wiring harness and connector. No on-board addressing jumpers or switches shall be allowed.
- Removal or failure of any LED module shall not affect the operation of any other LED module or sign component. Removal of one or more LED modules shall not affect the structural integrity of any part of the sign.
- It shall not be possible to mount an LED display module upside-down or in an otherwise incorrect position within the DMS display matrix.

- All LED display modules, as well as the LED pixel boards and driver circuit boards, shall be identical and interchangeable throughout the DMS.
- 8.1 LED Pixels
- Each LED module shall contain a printed circuit board to which LED pixels are soldered. The LED pixel matrix shall conform to the following specifications:
- Each LED module shall contain a minimum of 45 LED pixels configured in a two dimensional array. The pixel array shall be a minimum of nine (9) pixels high by five (5) pixels wide.
 - The distance from the center of one pixel to the center of all adjacent pixels, both horizontally and vertically, shall be 2.6-inches (66 mm).
 - Each pixel shall consist of a minimum of one (1) independent string of discrete LEDs for each color. All pixels shall contain an equal quantity of LED strings.
 - The failure of an LED string or pixel shall not cause the failure of any other LED string or pixel in the DMS.
 - Each pixel shall contain the quantity of discrete LEDs needed to output white colored light at a minimum luminous intensity of 12,400 candelas per square meter when operated within the forward current limits defined in these specifications.
 - Each pixel shall also be capable of displaying amber colored light with a minimum luminous intensity of 7,440 candelas per square meter when operated within the forward current limits defined in these specifications.
 - Each LED pixel shall not consume more than 1.5 watts.
 - The circular base of the discrete LEDs shall be soldered so that they are flush and parallel to the surface of the printed circuit board. The longitudinal axis of the LEDs shall be perpendicular to the circuit board.
- 8.2 Discrete LEDs
- DMS pixels shall be constructed with discrete LEDs manufactured by Avago Technologies (formerly Agilent Technologies), Toshiba Corporation, Nichia Corporation, OSRAM, or equivalent. Discrete LEDs shall conform to the following specifications:
- All LEDs shall have a nominal viewing cone of 30 degrees with a half-power angle of 15 degrees measured from the longitudinal axis of the LED. Viewing cone tolerances shall be as specified in the LED manufacturer's product specifications and shall not exceed +/- 3 degrees.
 - Red LEDs shall utilize AlInGaP semiconductor technology and shall emit red light that has a peak wavelength of 650 ± 5 nm.
 - Green LEDs shall utilize InGaN semiconductor technology and shall emit green light that has a peak wavelength of 525 ± 5 nm.
 - Blue LEDs shall utilize InGaN semiconductor technology and shall emit blue light that has a peak wavelength of 470 ± 5 nm.
 - The LED lenses shall be fabricated from UV light resistant epoxy.
 - The LED manufacturer shall perform color sorting of the bins. Each color of LEDs shall be obtained from no more than two (2) consecutive color "bins" as defined by the LED manufacturer.

- The LED manufacturer shall perform intensity sorting of the bins. LEDs shall be obtained from no more than two (2) consecutive luminous intensity “bins” as defined by the LED manufacturer.
- The various LED color and intensity bins shall be distributed evenly throughout the sign and shall be consistent from pixel to pixel. Random distribution of the LED bins shall not be accepted.
- LED package style shall be either through-hole flush-mount or surface-mount. Through-hole LEDs with standoffs will not be accepted.
- All LEDs used in all DMS provided for this contract shall be from the same manufacturer and of the same part number, except for the variations in the part number due to the intensity and color bins.
- The LEDs shall be rated by the LED manufacturer to have a minimum lifetime of 100,000 hours of continuous operation while maintaining a minimum of 70% of the original brightness.

8.3 Pixel Drive Circuitry

One (1) electronic driver circuit board shall be provided for each LED pixel module and shall individually control all pixels on that module. The driver circuit boards shall conform to the following specifications:

- Each LED driver board shall be microprocessor-controlled and shall communicate with the sign controller on a wire or fiber optic communication network using an addressable network protocol. The microprocessor shall process commands from the sign controller to display data, perform diagnostic tests, and report pixel and diagnostic status.
- Constant current LED driver ICs shall be used to prevent LED forward current from exceeding the LED manufacturer’s recommended forward current whenever a forward voltage is applied. To maximize LED service life, LED drive currents will not be allowed that exceed the manufacturer’s recommendations for the 100,000-hour lifetime requirement.
- The LED pixels shall be directly driven using pulse width modulation (PWM) of the drive current to control the display intensity. This LED driver circuitry shall vary the current pulse width to achieve the proper display intensity levels for all ambient light conditions. The drive current pulse shall be modulated at a frequency high enough to provide flicker-free operation and a minimum of 200 brightness levels.
- The LED driver circuitry shall receive updated display data at a minimum rate of ten (10) frames per second from the sign controller.
- Each LED driver circuit shall be powered by 24 VDC from external regulated DC power supplies. Each driver circuit shall receive power from a minimum of two (2) independent power supplies. Indicator LEDs shall be provided to indicate the status of each power source.
- Each LED driver circuit shall contain a microprocessor-controlled power regulation circuit that controls the voltage applied to the LED strings. The power circuit shall automatically adjust the voltage supplied to the LEDs to optimize power consumption efficiency as the temperature changes.

- The voltage of each power input shall be measured to the nearest tenth of a volt and reported to the sign controller upon request. Each driver circuit shall also contain one status LED for each power source that indicates if the power source is present or not.
- The LED driver circuitry shall be able to detect that individual LED strings or pixels are stuck off and shall report the pixel status to the sign controller upon request.
- The LED driver board shall contain a seven segment numeric LED display that indicates the functional status of the driver and pixel boards. At a minimum, it shall indicate error states of the LED pixels and communication network. The indicator shall be positioned such that a maintenance technician can easily view the status code for diagnostic purposes. The status codes shall also be reported to the sign controller upon request.

8.4 Characters Displayed

The signs shall be capable of displaying ASCII characters 32 through 126 (including all upper and lower case letters and digits from 0 to 9) at any location in a message line. The display area shall be 27 pixels high by 125 pixels wide.

The sign shall normally display single stroke (4 x 7) characters with single-column spacing between characters. The operator shall be able to display normal (5 X 7), expanded (6 x 7) or double-stroke (7 x 7) character fonts or change the default spacing between characters. The spacing options shall be one, two or three pixel columns. Font access privileges shall be assigned by the system supervisor.

The full matrix display shall be capable of displaying other sized character, graphics/symbols, and other number of lines depending on the height of the character utilized.

The separation between the last column of one module and the first column of the next shall be equal to the horizontal distance between the columns of a single display module. The separation between the last row of one module and the first row of the next shall be equal to the horizontal distance between the rows of a single display module.

18-inch characters shall be legible under all light conditions at a distance of 900 feet within a 30 degree cone of vision centered around the optical axis of the pixel. The cone perimeter shall be defined by its 50% intensity points.

The sign shall be the proper brightness in all lighting conditions for optimum legibility. It shall be bright enough to have a good target value, but not be the point where the pixels bloom, especially in low ambient light level conditions.

The brightness and color of each pixel shall be uniform over the entire face of the sign within the 30 degree cone of vision from 900 feet to 200 feet in all lighting conditions. Non-uniformity of brightness or color over the face of the sign under these conditions shall be cause for rejection of the sign.

8.5 Display of Graphic Images

The DMS control software shall support the inclusion of graphics in messages. If the NTCIP 1203 v2 standard has not reached a "recommended" or "approved" state by the time of contract award, the vendor shall support graphics using manufacturer-specific objects and MULTI tags.

If a manufacturer-specific means of supporting graphics is used, the vendor shall commit to provide NTCIP 1203 v2 firmware updates at no cost to the customer. These updates will include all current requirements of these specifications and also standard graphics

support. The vendor shall install the updates no later than six months after the NTCIP 1203 v2 standard reaches the "approved" state.

9.0 Regulated DC Power Supplies

The LED pixel display modules shall be powered with auto-ranging regulated switching power supplies that convert the incoming AC to DC at a nominal voltage of 24 volts DC. Power supplies shall be wired in a redundant parallel configuration that uses multiple supplies for the DMS display matrix.

Power supplies shall be arranged in redundant pairs within the display such that each pair supplies power to a defined region of the sign. Each pair of power supplies shall contain two (2) physically and electrically independent supplies. Each pair of power supplies shall be parallel, but shall not be wired in a current sharing configuration.

Power supplies within each pair shall be redundant and rated such that if one supply fails, the remaining supply shall be able to operate 100% of the pixels in that display region at 100% brightness when the internal DMS air temperature is +140°F (60°C) or less.

Each power supply within each pair shall receive 120VAC power from separate circuits on separate circuit breakers, such that a single tripped breaker will not disconnect power from both supplies. It shall be acceptable for a single circuit breaker to power multiple DC power supplies provided that none of those power supplies are in the same power supply pair.

The power supplies shall be sufficient to maintain the appropriate LED display intensity throughout the entire operating input voltage range.

The output of each power supply shall be connected to multiple circuits that provide power to the LED modules. Each output circuit shall not exceed 15 amperes and shall be fused.

Each group of power supplies shall be monitored by a microprocessor-controlled circuit. This circuit shall monitor the voltage of each power supply and the status of each output circuit's fuse. The power supply voltages and fuse states shall be reported to the sign controller upon request. The power supplies used to power the LED pixel modules shall be identical and interchangeable throughout the DMS.

Regulated DC power supplies shall conform to the following specifications:

- Nominal output voltage of 24 VDC +/- 10%
- Nominal maximum output power rating of 1000 watts
- Operating input voltage range shall be a minimum of 90 to 260 VAC
- Operating temperature range shall be a minimum of -30°F to +165°F (-34°C to +74°C)
- Maximum output power rating shall be maintained over a minimum temperature range of -30°F to +140°F (-34°C to +60°C)
- Power supply efficiency shall be a minimum of 80%
- Power factor rating shall be a minimum of 0.95
- Power supply input circuit shall be fused
- Automatic output shut down and restart if the power supply overheats or one of the following output faults occurs: over-voltage, short circuit, or over-current
- Power supplies shall be UL listed
- Printed circuit boards shall be protected by an acrylic conformal coating

9.1 Photoelectric Sensor Devices

Three (3) photocells shall be installed on the sign. These devices shall permit automatic light intensity measurement of light conditions at each sign location.

These photocells shall be mounted in a manner to measure front, rear and ambient light conditions.

9.2 Brightness Control

Automatic adjustment of the LED brightness shall occur in small enough increments so that the brightness of the sign changes smoothly, with no perceivable brightness change between adjacent levels. Provision shall be made to prevent perceivable brightening of the sign due to stray headlights shining upon the photo sensors at night.

Pixel brightness shall be controlled by pulse width modulation of the DC current. The pixel current waveform shall have a frequency of 100 +/-5 Hertz at nighttime brightness levels and 2400 ± 120 Hertz at daytime brightness levels with an adjustable duty cycle of 0.03 to 99.9% in 0.5% or finer increments. Brightness shall be manually settable from the front panel of the controller and remotely from the central computer in 1% increments. Brightness control shall be able to be returned to automatic from the sign controller front panel and the central computer.

9.3 Pixel Status Feedback

Two separate types of pixel status feedback shall be provided to the central controller from the local sign controller. These include a pixel test and a pixel read:

Pixel Test: The pixel test shall be performed from the central controller on command and automatically once a day. During a pixel test, the full operational status of each string of LEDs in each pixel shall be tested and then transmitted to the central controller or laptop computer. This pixel status test shall distinguish the difference between half out, full out, half stuck-on and fully stuck-on pixels. A list of defective pixels shall be provided, listing pixel status, line number, module number, column number and row number for each defective pixel. The pixel test may briefly disturb the displayed message for less than 0.5 seconds.

Pixel Read: The pixel read shall be performed during both message downloads and during every sign poll from the central controller or laptop computer. The pixel read shall perform a real-time read of the displayed message and shall return the state of each pixel to the central controller as it is currently displayed to the motorist, including any errors. This shall allow the central controller operator to see what is visibly displayed to the motorist on an individual pixel basis. During a pixel read, the state of each pixel (full-on, half-on or off) in the sign shall be read by the sign controller to allow the central controller or laptop computer to show the actual message, including static flashing and alternating messages, that is visibly displayed on the sign in a WYSIWYG format. This pixel reading shall take place while a message is displayed on the sign without disturbing the message in any way. Any flashing, flickering, blinking, dimming, or other disturbance of the message during this pixel read shall be cause for rejection of the sign.

The pixel read shall be an actual real-time read of the current flowing through each string of LEDs at the time of the associated sign poll or message download and shall not be accomplished by simulating errors based on the last pixel test.

10.0 **Environmental Operating Parameters**

All DMS components shall be capable of operating without any decrease in performance over a temperature range of -40°C (-40°F) to + 70°C (+158°F) with a relative humidity of up to 95% non-condensing, unless otherwise noted in this specification.

11.0. **Sign Controller**

11.1 General Requirements

Each DMS shall be controlled and monitored by its own sign controller. The sign controller shall be a stand-alone microprocessor-based system, which does not require continuous communication with DMS control software in order to perform most DMS control functions.

The sign controller shall meet the following operational requirements:

- Communicate using the NTCIP protocol

- Contain memory for storing changeable and permanent messages, schedules, and other necessary files for controller operation
- Include a front panel user interface with LCD and keypad for direct operation and diagnostics as described herein
- Contain a minimum of three (3) NTCIP-compliant RS232 communication ports
- Contain a minimum of one (1) NTCIP-compliant Ethernet port with RJ45 connector
- Contain a built-in Hayes-compatible modem with standard RJ11 connector
- Contain DMS-specific control firmware (embedded software) that shall monitor all external and internal sensors and communication inputs and control the display modules as directed by external control software and the front panel interface

NTCIP shall be natively supported in the DMS controller. External protocol converter or translator devices shall not be allowed.

11.2 Controller Location

The sign controller and associated communication equipment shall be installed inside the DMS housing.

11.3 Environmental

The sign controller shall meet the following environmental requirements defined in NEMA Standards Publication TS 4, Hardware Standards for Dynamic Message Signs (DMS), with NTCIP Requirements.

11.4 Mechanical and Electrical

The sign controller shall meet the following electrical and mechanical requirements:

- Mount in a standard EIA 19-inch (480 mm) equipment rack with a maximum 4U space requirement
- Weigh no more than 10 pounds, including its enclosure
- Consume no more than 30 watts of power
- Powered by an internal regulated DC power supply capable of operating on 120VAC or 240VAC at both 50Hz and 60Hz
- All printed circuit boards shall be sealed with an acrylic conformal coating

11.5 Operational Requirements

Front Panel User Interface

The sign controller's front panel shall include a keypad and LCD. These devices shall be used to perform the following functions with the sign controller and DMS:

- Monitor the current status of the sign controller, including the status of all sensors and a monochromatic what-you-see-is-what-you-get (WYSIWYG) representation of the message visible on the display face
- Perform diagnostics testing of various system components, including pixels, power systems, sensors, and more
- Activate messages stored in memory
- Configure display parameters, including display size and colors
- Configure communications port settings and NTCIP options

The front panel interface shall also include:

- Power switch to turn the controller on and off
- LED power "on" indicator
- "Local/remote" switch that places the controller in local mode such that it can be controlled from the front panel interface, instead of via the primary NTCIP communication channel
- LED to indicate state of the "local/remote" mode switch
- Reset switch to quickly restart the controller
- LED "Active" indicator that blinks when the controller is operating correctly
- LED to indicate when any of the NTCIP communication channels are active

11.6 Memory

The sign controller shall have non-volatile electronically changeable memory. This memory shall be formed by flash or battery-backed static RAM integrated circuits that

retain the data in memory for a minimum of 30 days following a power loss. This changeable memory shall be used to store messages and schedules. The controller memory shall be capable of storing a minimum of 100 changeable messages in non-volatile RAM.

11.7 Internal Clock

The DMS sign controller shall contain a computer-readable clock that has a battery backup circuit. The battery shall keep the clock operating properly for at least 5 years without external power, and the clock shall automatically adjust for daylight savings time and leap year using hardware, software, or a combination of both. The clock shall be set electronically by the sign controller microprocessor and shall be accurate to within one (1) minute per month.

11.8 Communications

All remote communication ports shall be NTCIP-compatible as defined in the "Requirements for NTCIP Compatibility" section of these specifications.

11.9 Communication Modes

The DMS sign controller shall be able to receive instructions from and provide information to a computer containing DMS control software using the following communication modes:

- Remotely via direct or dial-up communications with a remotely located computer. The system communications backbone, as well as all field modems or signal converters, shall provide the DMS sign controller with an RS232 signal.
- Locally via direct connection with a laptop computer that is connected directly to the sign controller using an RS232 null modem connection.

11.10 Serial Communication Ports

The DMS sign controller shall contain a minimum of three (3) NTCIP-compatible RS232 communication ports. These ports shall support multiple communication interfaces, including, but not limited to, direct null-modem (for local laptop control), dial-up and leased-line modems, radio systems, cellular modems, and fiber optic modems. The RS232 ports shall all have standard DB9M connectors.

The baud rate, connection type, and NTCIP communication protocol shall be configurable. Each port must support all typical serial baud rates ranging from 1200 to 115,200 baud. All three ports shall be capable of supporting either of the following sub network profiles: NTCIP 2101 (PMPP) or NTCIP 2103 (PPP). They shall also be capable of supporting either NTCIP 2201 (Null) or NTCIP 2202 (Internet) transport profiles. Only one each of the transport and sub network profiles shall be active at any time on each port.

11.11 Ethernet Port

The DMS sign controller shall contain a minimum of one (1) 10/100Base-T Ethernet communication port. This port shall be available for use for communicating from the central control system to the DMS sign controller when an Ethernet network is available. The Ethernet port shall have a standard RJ45 connector.

Communications on the Ethernet port shall be NTCIP-compatible using the NTCIP 2202 Internet transport profile and the NTCIP 2104 Ethernet sub network profile. This shall permit the controller to be operated on any typical Ethernet network using the TCP/IP and UDP/IP protocols.

For purposes of this contract this DMS shall connect via a layer 3 switch at the Dan Ryan/I-55 Interchange to the Traffic Systems Center.

11.12 Dial-Up Modem Communication Port

The DMS sign controller shall include one (1) built-in Hayes-compatible dial-up modem. The modem port shall have a standard RJ11 connector.

This modem shall be configured to support either the NTCIP 2101 (PMPP) or the NTCIP 2103 (PPP) sub network profile. At least one of the following transport profiles shall also be available for configuration: NTCIP 2201 (Null) or NTCIP 2202 (Internet). Only one each of the transport and sub network profiles shall be active at any time on the port.

The modem shall be configurable to support both incoming and outgoing calls as supported by NTCIP. The modem shall support a minimum communication speed range from 1200 baud to 28,800 baud. The modem shall support the following protocols at a minimum: Hayes-compatible "AT" command set, MNP5, MNP10, and V.42bis.

11.13 Controller Addressing

The DMS sign controller shall use whatever addressing scheme is appropriate for the NTCIP network types used for communications. The controller addressing shall be configurable through the front panel user interface.

NTCIP 2101 (PMPP) networks shall be configured with an address in the range 1 to 255 with a default address of 1. NTCIP 2104 (Ethernet) networks shall use a static IP address. Both the IP address and subnet shall be configurable. NTCIP 2103 (PPP) networks shall not require network addressing.

12.0 Transient Protection

The DMS and sign controller signal and power inputs shall be protected from electrical spikes and transients as follows:

12.1 Sign AC Power

The AC power feed for all equipment in the sign cabinet shall be protected at the panel board by a parallel-connection surge suppresser rated for a minimum surge of 40 kA. This device shall conform to the following requirements:

- Withstand a peak 80,000-ampere surge current, 40kA L-N, 40kA L-G
- Designed, manufactured, & tested consistent with: IEEE C6.41.1-2002, C62.41.2-2002, C2.45-2002, ANSI/IEEE C62.41-1991, C62.45-1992, NEMA LS-1, and NEC 285.6
- Less than 0.5 nanosecond response time
- Temperature range of -40°F to +140°F (-40°C to +70°C)
- Approximate dimensions of 3-inches (76 mm) wide by 8-inches (203 mm) long by 3-inches (76 mm) high
- 5000 Category (C3 High) impulses with <10% drift, short circuit current rating of 200,000 rms symmetrical amperes (UL Listed)
- UL listed to: UL 1449 200kA SCCR, UL 1283 4th Edition, and Canadian safety standards

12.2 Control Equipment AC Power

A series-connected surge suppressor capable of passing 15 amps of current shall protect the sign controller and other control and communication equipment. This device shall conform to the following requirements:

- Withstand a peak 50,000 ampere surge current for an 8x20 microsecond wave form
- Maximum continuous operating current of 15 amps at 120 VAC, 60 Hz
- Series inductance of 200 micro henrys (nominal)
- Temperature range of -40°F to +158°F (-40°C to +70°C)
- Approximate dimensions of 3-inches wide by 5-inches long by 2-inches high (76 mm by 127 mm by 50 mm)
- The device shall be UL-1449 recognized
- UL 1449 surge rating of 400 V or less

- 12.3 Communication Signals
Transient voltage surge suppressors shall protect all communication signals connecting to the control equipment from off-site sources using copper cables.
Transient voltage surge suppressors shall protect all copper communication lines used to pass data between the sign controller and sign.
- 12.4 Protection
A series/parallel two-stage suppression device shall protect the modem communication port from over-voltage and over-current conditions. This surge protection shall be integrated internally within the controller.

**13.0 Local User Auxiliary Interface;
when DMS sign Controller is located inside of DMS sign Enclosure**

- 13.1 Auxiliary Control Panel
The DMS shall include an auxiliary control panel that will provide a secondary user interface panel for DMS control, configuration, and maintenance. The auxiliary control panel shall meet the same electrical, mechanical, and environmental specifications as the DMS controller. It shall be powered independently from a 120 VAC outlet. There also shall be a 120 volt convenience outlet for maintenance personnel lap top computers and a hinged shelf which folds from inside the cabinet and is suitable for the laptop computer to rest on.
- 13.2 Interface Panel
The auxiliary control panel shall have an LCD panel and keypad identical to those found on the DMS controller. It shall also contain a local/remote switch, a reset switch, status LEDs, and one NTCIP compatible RS232 communication port that meet the same specifications as the DMS controller.
- 13.3 DMS Control Interface
The auxiliary control panel shall include an identical menu system to the DMS controller with all of its features and functionality.
- 13.4 Location
The Auxiliary Control Panel shall be installed in the existing DMS control cabinet. Any necessary cutting, fitting, and miscellaneous materials necessary to make the Auxiliary Control Panel functional in the existing DMS Control cabinet shall be considered incidental to this pay item.
- 13.5 Controller Signal Interface
The auxiliary control panel shall interface to the DMS controller using outdoor-rated Category 5 copper cable. It shall be capable of operating up to 4000 feet from the DMS controller.

14.0 Sign Controller Functions

The sign controller shall be capable of being controlled from the central controller or the laptop computer.

The controller software shall be capable of performing the following functions:

Display a message, including:

1. Static messages
2. Flashing messages
3. Alternating messages

Messages shall be capable of displaying text, graphics or a combination of both. The graphics area shall be downloaded from the central controller with each message.

It shall be possible to separately vary the flashing and alternating frequencies.

Flashing messages shall have the following adjustable timing:

1. Message time on from 0.5 to 5.0 seconds in 0.1 second increments.
2. Message time off from 0.5 to 5.0 seconds in 0.1 second increments

It shall be possible to flash any character or set of characters in a static message.
Alternating messages shall have the following adjustable timing:

1. Primary message time on from 0.5 to 5.0 seconds in 0.1 second increments.
2. Primary message time off from 0 to 5.0 seconds in 0.1 second increments.
3. Alternative message time on from 0.5 to 5.0 seconds in 0.1 second increments.
4. Alternate message time off from 0 to 5.0 seconds in 0.1 second increments.

It shall be possible to flash any character or set of characters in an alternating message at the adjustable frequencies listed above for flashing messages. The flashing period shall be a sub-multiple of the alternating on-time it is associated with.

Report errors and failures, including:

1. Power failure
2. Power recovery
3. Pixel string failure
4. Fan failure
5. Over a user selectable critical temperature
6. Power supply failure
7. Data transmission error
8. Receipt of invalid data
9. Communication failure recovery

Message and status monitoring:

The sign controller shall respond to the central controller whenever it receives a request for status (a poll). The return message shall be capable of providing the following information:

1. Actual message that is visibly displayed on the sign on an individual pixel basis (full-on, half-on or off)
2. Current sign illumination level
3. Local Control Panel switch position (central, local or local override mode)
4. Error and failure reports
5. Temperature readings
6. LED power supply voltage levels
7. Origin of display message transmission (laptop, manual or central)
8. Heater status
9. Heat tape status
10. Address of sign controller
11. Uninterruptible power supply status
12. AC Surge protection status
13. Communication line protection status
14. Operational status of the following sensors
 - Each temperature sensor
 - Each photocell
 - Each airflow sensor
 - Humidity sensor
 - Each power supply sensor
 - Severe error condition response

In dial-up mode, the sign controller shall initiate a call to the central controller and report any severe error conditions. In multi-drop mode, the sign controller shall report severe error conditions to the central controller during the next polling.

The severe error conditions are:

1. AC power failure
2. AC power recovery
3. Surge protection has been tripped

4. The sign housing door is open

Each time the sign controller is polled by the DMS Master Controller or laptop computer, the sign controller shall test the operation status of the sensors listed below and return this information to the DMS Master Controller. This operational status test shall determine if each of the following sensors are functioning properly.

1. Each temperature sensor
2. Each photocell
3. Humidity sensor
4. Each airflow sensor
5. Each LED power supply

The sign controller shall provide a library with a minimum of 50 permanent messages, consisting of 30 or less characters per line, stored in PROM. The sign controller shall also be able to accept a downloaded library from the central or laptop computer of a minimum of 25 changeable messages stored in non-volatile RAM. These messages may be called for display on the sign from the keypad on the front panel of the DMS Controller.

The sign controller shall also be capable of displaying messages on the sign that are downloaded from the central controller or laptop computer, but are not located in the library stored in non-volatile memory of the sign controller.

The sign shall normally display single stroke (4 X7) characters with single-column spacing between characters. The sign shall also be able to display single stroke (5 X 7), expanded (6 X 7) or double-stroke (7 X 7) nominal character fonts or change the default spacing between characters. The spacing options shall be one, two or three pixel columns. Each font may be edited and downloaded to the sign controller from the central controller or laptop computer at any time without any software or hardware modifications.

The full matrix display shall also be capable of displaying other sized characters, graphics/symbols, and other number of lines depending on the height of the character utilized. The interline spacing shall be variable.

The sign controller shall monitor the photo cell circuits in the sign and convert the measured light intensity into the desired pixel brightness. The photo circuit readings shall be correlated with a brightness table in the sign controller. The brightness table shall have a minimum of 255 brightness levels. Automatic adjustment of the LED driving waveform duty cycle shall occur in small enough increments so that brightness of the sign changes smoothly, with no perceivable brightness change between adjacent levels. The brightness table in each individual sign controller shall be adjustable from the central controller and can be customized according to the requirements of the installation site. Each sign shall have its own, independent brightness table. Brightness shall be manually settable from the front panel of the controller and remotely from the central computer in one percent increments from one to 99%.

There shall be a means to adjust how rapidly the sign responds to changes in ambient light as measured by the photocells. This can be used, for example, to prevent the sign from changing its brightness due to a vehicle's headlight momentarily hitting the sign. The adjustment shall be made from the central controller or laptop computer and shall have two different settings, one for daytime control and one for nighttime control, with the day/night ambient light threshold also being an adjustable value. In addition, there shall be a means to specify different weighting factors for each photocell, to specify how prominently each photocell figures in the calculation of nighttime ambient light.

In the event of a power failure, the sign controller shall activate a programmable default message (which shall be a blank message) and shall report the AC power failure to the central controller.

The operational status of each pixel in the sign shall be automatically tested once a day and tested when a pixel test is requested from the central controller or laptop computer. A list of defective pixels shall then be transmitted to the central controller or laptop computer, listing pixel status test shall distinguish the difference between half-out, full-out, half-stuck on and fully stuck-on pixels. This test shall not affect the displayed message for more than 0.5 seconds.

When the sign controller is polled and when messages are downloaded from the central controller or laptop computer, each pixel in the sign shall be read and its current state (full-on, half-on or off), for the currently displayed message, shall be returned to the central controller. This will allow

the central controller or laptop computer to show the actual message that is visibly displayed on the sign on an individual pixel basis in a WUYSIWYG format. (This is different from the pixel test listed above.) This pixel status read shall not affect the displayed message in any way. The pixel read shall be an actual real-time read of the current flowing through each string of LEDs at the time of the associated sign poll or message download and shall not be accomplished by simulating errors based on the last pixel test.

The operational status of the fans shall be automatically tested once a day and tested on command from the central controller or laptop computer. Any failure will cause an error message to be sent to the central controller or laptop when the sign controller is polled by the central controller or laptop computer.

The sign controller shall read the internal temperature sensors, external ambient temperature sensor and the humidity sensor. The sign controller shall use these readings in an algorithm that turns on the heat tape and/or the fans at the appropriate times to reduce both frost on the face of the sign and condensation on the display modules and other electronic circuitry.

Temperature sensors shall be continuously measured and monitored by the sign controller. A temperature greater than a user selectable critical temperature shall cause the sign message to go to blank and the sign controller shall report this error message to the central controller. This user selectable critical temperature shall be capable of being changed by the central controller or laptop computer. The central controller and laptop computers shall have the ability to read all measurements from the sign controller.

All LED module power supply voltages shall be continuously measured by the sign controller. The sign controller shall provide these voltage readings to the central controller or laptop computer when the sign controller is polled by the central controller or laptop computer.

There shall be no perceivable blinking, flickering or ghosting of the pixels at any time, except during a pixel test as described above. The displayed message will not be affected in any way at any time for the pixel status read as described above.

In the event the central controller fails to communicate with the sign controller within a programmable time limit, the sign shall activate a programmable default message (which shall be a blank). This function shall apply only when the sign controller is in central control mode.

Failure of any sign shall not affect the operation of any other sign in the system.

The sign controller shall perform a consistency check of messages downloaded from the central controller or laptop computer to ensure that the message will fit in the display area of the sign. If any part of the message fails this check, the downloaded message shall not be displayed and an error message shall be displayed on the operator's GUI.

The sign controller internal time clock shall ensure that a message is taken down at the correct time, even in the event of a communications loss.

The sign controller shall maintain its internal time clock during power outages less than 255 minutes and display the proper message when power is restored.

The sign controller shall be able to put a self-updating time, temperature and/or date display on the sign.

The sign controller shall allow a moving arrow to be displayed by the central controller or laptop computer. The moving arrow shall be on one line with a standard message on the other lines. The moving arrows shall be from the left or right and shall start from one end or in the middle of the sign and continue to the end of the sign.

The sign controller shall blank the sign in the event of a communication failure or power failure. The controller shall blank the sign if failure lasts greater than 5 minutes. Communication failures are either on the field transmit, field receive, or both.

The sign controller shall have a special function output bit to control an auxiliary blank-out sign. This shall be a closure to ground capable of sinking at least 10 ma. It shall be controlled from the central controller.

The sign controller shall be capable of being remotely reset from the central controller.

The system power shall be protected by two stages of transient voltage suppression devices as required in the AC Power Section of this specification. Tripping of each stage (or both if tripped simultaneously) of the surge protection shall cause the sign controller to call central and report the error condition (for dial-up operation) or report the error condition to central on the next poll (for multi-drop operation). There shall be an option that is either enabled or disabled and is selected and downloaded from the central controller to the sign controller. When this option is

enabled, tripping of the second stage of surge protection shall prevent power from reaching any components of the sign until the surge protection has been replaced. When this option is disabled, the sign will continue to function normally after the second stage of surge protection is tripped.

Communication lines shall be protected by two stages of transient voltage suppression devices as required in the Sign Controller Communication Interface Section of this specification. Tripping of each stage (or both if tripped simultaneously) of the surge protection shall cause the sign controller to call central and report the error condition (for dial-up operation) or report the error condition to central on the next poll (for multi-drop operation). There shall be an option that is either enabled or disabled and is selected and downloaded from the central controller to the sign controller. When this option is enabled, tripping of the second stage of surge protection shall disconnect the communication lines until the surge protection has been replaced. When this option is disabled, tripping of the second stage of surge protection shall not disconnect the communication lines until the surge protection has been replaced. When this option is disabled, the sign will continue to function normally after the second stage of surge protection is tripped.

14.1 Modes of Operation

The mode of operation determines which level of control governs the DMS message selection. The three modes of operation are:

Central Mode: The local control panel switch is off and the central controller control and monitors the sign

Local Mode: The local control panel switch is on and the laptop computer is used to locally control the sign. The central controller only monitors the sign (i.e. status poll).

Local Override: The local mode has been overridden by the central to allow the central to control the sign in case the local control panel switch was unintentionally left in local mode.

14.2 AC Power

The sign and its sign controller shall be capable of operating with 120/240 VAC, 50 amp per leg, 60 hertz, single-phase power.

The sign shall have a 50 amp per leg, 120/240 VAC, two-pole load center with 16 circuit capability. Each circuit in the sign shall be powered from a separate circuit breaker.

The system shall be protected by two stages of transient voltage suppression devices including MOVs and spark gap arrestor. If enabled by the central controller, tripping of the second stage shall prevent power from reaching any components of the sign until the surge protection has been replaced. Tripping of each stage of the surge protection shall cause the sign controller to call central and report the error condition (for dial-up operation) or report the error condition to central on the next poll (for multi-drop operation).

14.3 Transient Test Requirements

The sign housing electronics and the control cabinet shall be separately capable of withstanding a high-energy transient having the following characteristics repeatedly applied to the AC input terminals:

A ten microfarad oil filled capacitor charged to 1000 VDC \pm 5% shall be discharged into the power input terminals a minimum of three times for each polarity. Immediately following this test the unit under test shall perform all of its defined functions upon the restoration of normal AC power.

15.0 **Electronic Materials and Construction Methods**

15.1 Printed Circuit Boards

Printed Circuit Boards (PCB) design shall be such that components may be removed and replaced without damage to boards, traces or tracks.

Only FR-4 0.062 inch material shall be used. Inter-component wiring shall be copper clad track having a minimum weight of 2 ounces per square foot with adequate cross section for current to be carried. Jumper wires will not be permitted, except from plated-through holes to component. The maximum number of jumper wires allowed per circuit board is two.

All PCBs shall be finished with a solder mask and a component identifier silk screen.

15.2 Components

All components shall be of such design, fabrication, nomenclature, or other identification so as to be purchased from a wholesale electronics distributor, or from the component manufacturer, except for printed circuit board assemblies:

Circuit design shall be such that all components of the same generic type, regardless of manufacturer, shall function equally in accordance with the specifications.

All discrete components, such as resistors, capacitors, diodes, transistors, and integrated circuits shall be individually replaceable. Components shall be arranged so they are easily accessible for testing and replacement.

15.2.1 Capacitors

The DC and AC voltage ratings as well as the dissipation factor of a capacitor shall exceed the worst case design parameters of the circuitry by 50%

A capacitor which can be damaged by shock or vibration shall be supported mechanically by a clamp or fastener.

Capacitor encasements shall be resistant to cracking, peeling and discoloration.

15.2.2 Resistors

Resistors shall be within 5% of tolerance over the specified temperature range.

Any resistor shall not be operated in excess of 50% of its power rating.

15.2.3 Semiconductor Devices

All transistors, integrated circuits, and diodes shall be a standard type listed by EIA and clearly identifiable.

16.0 Technical Assistance

The DMS manufacturer's technical representative shall provide on-site technical assistance in following areas:

1. Sign to structure installation
2. Sign controller cabinet installation
3. Sign to controller cabling

The initial powering up of the sign(s) shall not be executed without the permission of the DMS manufacturer's technical representative.

17.0 Testing Requirements

The equipment covered by this specification shall be subjected to design approval tests (DAT), factory demonstration tests (FDT), stand-alone tests, systems tests and 72 hour and 90 day test periods to determine conformance with all the specification requirements. The Engineer may accept certification by an independent testing lab in lieu of the design approval tests to verify that the design approval tests have previously been satisfactorily completed. The DMS vendor shall arrange for and conduct the tests in accordance with the testing requirements stated herein. Unless otherwise specified, the DMS vendor is responsible for satisfying all inspection requirements prior to submission for the Engineer's inspection and acceptance. The contract periods will not be extended for time lost or delays caused by testing prior to final Department approval of any items. The Engineer reserves the right to have his representative witness any and all tests. The results of each test shall be compared with the requirements specified herein. Failure to conform to the requirements of any test shall be counted as a defect, and the equipment shall be subject to rejection by the Engineer. Rejected equipment may be offered again for a retest provided that all non-compliances have been corrected and retest by the DMS vendor and evidence thereof submitted to the Engineer.

Final inspection and acceptance of equipment shall be made after installation at the designated location as shown on the plans, unless otherwise specified herein.

17.1 Test Procedures

The DMS vendor shall provide five (5) copies of all design approval, factory demonstration, stand-alone and system test procedures and data forms for the Engineer's approval at least sixty (60) days prior to the day the tests are to begin. The test procedures shall include the sequence in which the tests will be conducted. The test procedures shall have the Engineer's approval prior to submission of equipment for tests. The DMS vendor shall furnish data forms containing all of the data taken, as well as quantitative results for all tests. The data forms shall be signed by an authorized

representative (company official) of the equipment manufacturer. At least one copy of the data forms shall be sent to the Engineer.

The DMS vendor shall be responsible for providing the test fixtures and test instruments for all of the tests.

17.2 Design Approval Tests

Design approval tests shall be conducted by the DMS vendor on one or more samples of equipment of each type, as approved by the Engineer, to determine if the design of the equipment meets the requirements of this Specification. The test shall be conducted in accordance with the approved test procedures as described in section 19.0.

If the design approval tests have not previously been satisfactorily completed by an independent testing lab and accepted by the Engineer, the Engineer shall be notified a minimum of thirty (30) calendar days in advance of the time these tests are to be conducted.

The design approval tests shall cover the following:

17.2.1 Temperature and Condensation

The DMS sign system equipment shall successfully perform all the functionality requirements listed in this specification under the following conditions in the order specified below:

1. The equipment shall be stabilized at -40°F (-40°C). After stabilization at this temperature, the equipment shall be operated without degradation for two (2) hours.
2. Moisture shall be caused to condense on the equipment by allowing it to warm up to room temperature in an atmosphere having relative humidity of at least 40% and the equipment shall be satisfactorily operated for two (2) hours while wet.
3. The equipment shall be stabilized at 149°F (65°C). After stabilization, the equipment shall be satisfactorily operated for two (2) hours without degradation or failure.

17.2.2 Primary Power Variation

The equipment shall meet the specified performance requirements when the nominal input voltage is $115\text{ V} \pm 15\text{ V}$. The equipment shall be operated at the extreme limits for at least 15 minutes during which the operational test of the FDT shall be successfully performed.

17.2.3 Power Service Transients

The equipment shall meet the performance requirements, specified in the parent specification, when subjected to the power service transient specified in 2.1.6 "Transient, Power Service", of the NEMA standard TS1. The equipment shall meet the performance requirements specified in the parent specification.

17.2.4 Relative Humidity

The equipment shall meet its performance requirements when subjected to a temperature of (149°F 65°C) and a relative humidity of 90%. The equipment shall be maintained at the above condition for 48 hours. At the conclusion of the 48 hour soak, the equipment shall meet the requirements of the operational test of the FDT within 30 minutes of beginning the test.

17.2.5 Vibration

The equipment (excluding cabinets) shall show no degradation of mechanical structure, soldered components, or plug-in components and shall operate in accordance with the manufacturer's equipment specifications after being subjected to the vibration tests as described in Section 2.2.5, "Vibration Test", of the NEMA standard TS1.

17.2.6 Consequences of Design Approval Test Failure

If the unit fails the design approval test, the design fault shall be corrected and the entire design approval test shall be repeated. All deliverable units shall be modified without additional costs to the Department, to include design changes required to pass the design approval tests.

18.0 **DMS Controller Uninterruptible Power Supply**

A UPS shall be provided to allow the sign controller to notify the central controller when an improper power condition at the DMS persists for longer than 30 seconds.

The UPS shall meet the following minimum specifications:

1. Line Transient Protection: Passes ANSI/IEEE C62.41 Category A testing
2. Safety Compliance: UL listed to UA1778
3. EMC Compliance: FCC Class B
4. Efficiency: >95% on line

5. Capacity VA/Watts @ 0.67P.F. : 425VA/285W
6. Voltage Nominal: 120 VAC
7. Voltage Range: 100-142 VAC
8. Typical run time (minutes): Full load: 3 minutes. Typical load: 5 minutes
9. Transfer time: 4 ms typical
10. Battery: Sealed, maintenance-free, valve regulated, UL 924 recognized.
11. Battery recharge time (to 95% of capacity): 8 hours with output fully loaded
12. Over current protection (on line): circuit breaker
13. Input fault current (maximum): 15A
14. Operating temperature: Range minimum -10°F -140°F (-23°C to 60°C)
15. Humidity: 5% - 95% RH (non-condensing)

19.0 Factory Demonstration Tests

The DMS vendor shall be responsible for conducting Factory Demonstration Tests on an all units at the DMS Vendor's Manufacturing Facility. These tests shall be performed on each unit supplied. The Engineer shall be notified a minimum of sixty (60) calendar days before the start of tests. The DMS Vendor shall pay for all travel expenses, including airfare, rental car, hotel, meals, etc., for up to three (3) department personnel or designated representatives for the Engineer to witness the Factory Demonstration Tests on the first unit at the vendor's manufacturing facility. All tests shall be conducted in accordance with the approved test procedures of Section 17.0. All equipment shall pass the following individual tests:

Examination Tests:

Each equipment shall be examined carefully to verify that the materials, design, construction, markings and workmanship comply with the requirements of the Specification.

Continuity Tests:

The wiring shall be checked to determine conform with the requirements of the appropriate paragraphs in the Specifications.

19.1 Operational Test

Each equipment shall be operated long enough to permit equipment temperature stabilization, and to check and record an adequate number of performance characteristics to ensure compliance with the requirements of this Specification.

19.2 Consequences of Factory Test Failure

If any unit fails to pass its demonstration test, the unit shall be corrected and another unit substituted in its place and the test successfully repeated.

If a unit has been modified as a result of a demonstration test failure, a report shall be prepared and delivered to the Engineer prior to shipment of the unit. The report shall describe the nature of the failure and the corrective action taken.

If a failure pattern develops, the Engineer may direct that design and construction modifications be made to all units without additional cost to the Department or extension of the contract period.

20.0 Stand-Alone Tests

The DMS vendor shall conduct an approved stand-alone test of the equipment installation at the field site. The test shall, as a minimum, exercise all stand-alone (non-network) functional operations of the field equipment with all of the equipment installed as per the plans, or as directed by the Engineer.

Approved data forms shall be completed and turned over to the Engineer as the basis for review and rejection or acceptance. At least thirty (30) working days' notice shall be given prior to all tests to permit the Engineer or his representative to observe each test.

20.1 Consequences of Stand-Alone Test Failure

If any unit fails to pass its stand-alone test, the unit shall be corrected or another unit substituted in its place and the test successfully repeated.

If a unit has been modified as a result of a stand-alone test failure, a report shall be prepared and delivered to the Engineer prior to the re-testing of the unit. The report shall describe the nature of the failure and the corrective action taken.

If a failure pattern develops, the Engineer may direct that design and construction modifications be made to all units without additional cost to the Department or extension of the contract period.

21.0 System Test

The DMS vendor shall conduct approved DMS system tests on the field equipment with the central equipment. The tests shall, as a minimum, exercise all remote control functions and display the return status codes from the controller.

Approved data forms shall be completed and turned over to the Engineer as the basis for review and for rejection or acceptance.

21.1 Consequence of System Test Failure

If system tests fail because of any components(s) in the subsystem, the particular components(s) shall be corrected or substituted with other components(s) and the tests shall be repeated. If a component has been modified as a result of the system test failure, a report shall be prepared and delivered to the Engineer prior to retest.

22.0 72 Hours and 90 Days Test Failure

After the installation of the DMS system is completed and the successful completion of the System Test, the DMS vendor shall conduct one continuous 72-hour full operating test prior to conducting a 90-day test period. The type of test to be conducted shall be approved by the Engineer, and shall consist primarily of exercising all control, monitor and communications functions of the field equipment by the central equipment.

The 90-day test period shall commence on the first day after the successful completion of the approved 72-hour continuous full operating test period.

During the 90-day test period, downtime, due to mechanical, electrical and/or other malfunctions, shall not exceed five (5) working days. The Engineer may extend the 90-day test period by a number of days equal to the downtime in excess of five (5) working days.

The Engineer will furnish the DMS vendor with a letter of approval stating the first day of the 90-day test period.

23.0 Final System Acceptance

Final system acceptance shall be defined as when all work and materials provided for in this item have been furnished and completely installed, and all parts of the work have been approved and accepted by the Engineer and the Dynamic Message Sign System has been operated continuously and successfully for ninety (90) calendar days with no more than five (5) working days downtime due to mechanical, electrical and/or other malfunctions.

24.0 Warranty

Equipment furnished under this Specification shall be guaranteed to perform according to these specifications and to the manufacturer's published specifications. Equipment shall be warranted for a minimum of **five years** return to factory against defects and/or failure in design, materials and workmanship. Unless otherwise specified in the invitation for bids, warranty coverage shall become effective on the date of final acceptance of the system by the Department. The Contractor shall assign to the Department all manufacturer's normal warranties or guarantees, on all such electronic, electrical and mechanical equipment, materials, technical data, and products furnished for and installed on the project. Defective equipment shall be repaired or replaced, at the manufacturer's option, during the warranty period at no cost to the Department. The Contractor shall provide a written document on DMS Vendor letterhead, signed by the DMS Principle, documenting said warranties or guarantees and shall be submitted to the Engineer before project acceptance.

25.0 Center to Field Communications NTCIP Requirements

This section describes the minimum specifications for the NTCIP communication capabilities of the DMS controller and DMS control software. The contractor shall provide all the software, firmware, and services necessary to operate a dynamic message sign (DMS) system that fully complies with the NTCIP functional requirements specified herein, including incidental items that may have been inadvertently omitted.

References

These specifications reference standards through their NTCIP designated names. The following list provides the current versions of each of these standards.

Each NTCIP device covered by these project specifications shall implement the version of the standard that is specified in the following table. Refer to the NTCIP library at www.ntcip.org for information on the current status of NTCIP standards.

Document Number and Version	Document Title	Document Status
NTCIP 1101:1996 and Amendment 1	Simple Transportation Management Framework (STMF)	Approved Standard with Amendment
NTCIP 1102:2004	Octet Encoding Rules (OER) Base Protocol	Approved Standard
NTCIP 1103 v1.26a	Transportation Management Protocols	Recommended Standard
NTCIP 1201:1996 and Amendment 1	Global Object (GO) Definitions	Approved Standard
NTCIP 1203:1997 and Amendment 1	Object Definitions for Dynamic Message Signs	Approved Standard with Amendment
NTCIP 2001:1996 and Amendment 1	Class B Profile	Approved Standard
NTCIP 2101:2001	Point to Multi Point Protocol (PMPP) Using RS-232 Subnetwork Profile	Approved Standard
NTCIP 2103:2003	Point-to-Point Protocol Over RS-232 Subnetwork Profile	Approved Standard
NTCIP 2104:2003	Ethernet Subnetwork Profile	Approved Standard
NTCIP 2201:2003	Transportation Transport Profile	Approved Standard
NTCIP 2202:2001	Internet (TCP/IP and UDP/IP) Transport Profile	Approved Standard
NTCIP 2301:2001	Simple Transportation Management Framework (STMF) Application Profile	Approved Standard

Table 1: NTCIP Document References

25.1 SUBNETWORK PROFILES

Each serial or modem port on each NTCIP device shall be configurable to support both NTCIP 2101 and NTCIP 2103. Only one of these profiles shall be active at any given time. Serial ports shall support external dial-up modems.

Each Ethernet port on the NTCIP device shall comply with NTCIP 2104.

The NTCIP device(s) may support additional Subnet Profiles at the manufacturer's option. At any one time, only one subnet profile shall be active on a given port of the NTCIP device. All response datagram packets shall use the same transport profile used in the request. The NTCIP device shall be configurable to allow a field technician to activate the desired subnet profile and shall provide a visual indication of the currently selected subnet profile.

25.2 TRANSPORT PROFILES

Each serial or modem port on each NTCIP device shall be configurable to support both NTCIP 2201 and NTCIP 2202.

Each Ethernet port on the NTCIP device shall comply with NTCIP 2202.

The NTCIP device(s) may support additional transport profiles at the manufacturer's option. Response datagrams shall use the same transport profile used in the request. Each NTCIP device shall support the receipt of datagrams conforming to any of the supported transport profiles at any time.

25.3 APPLICATION PROFILES

Each NTCIP device shall comply with NTCIP 2301 and shall meet the requirements for Conformance Level 1.

An NTCIP device may support additional application profiles at the manufacturer's option. Responses shall use the same application profile used by the request. Each NTCIP device shall support the receipt of application data packets at any time allowed by the subject standards.

25.4 OBJECT SUPPORT

Each NTCIP device shall support all mandatory objects of all mandatory conformance groups as defined in NTCIP 1201 and NTCIP 1203.

Each NTCIP device shall support all mandatory objects in all optional conformance groups required herein. All optional objects listed in these specifications shall be supported.

The NTCIP device(s) shall be required to support the following optional conformance groups.

Conformance Group	Reference
Time Management	NTCIP 1201
Timebase Event Schedule	NTCIP 1201
Report	NTCIP 1201
PMPP	NTCIP 1201
Font Configuration	NTCIP 1203
DMS Configuration	NTCIP 1203
MULTI Configuration	NTCIP 1203
MULTI Error Configuration	NTCIP 1203
Illumination/Brightness Control	NTCIP 1203
Scheduling	NTCIP 1203
Sign Status	NTCIP 1203
Status Error	NTCIP 1203
Pixel Error Status	NTCIP 1203

Table 2: Required Optional Conformance Groups

The following table indicates objects that are considered optional in the NTCIP standards, but are required by this specification. It also indicates modified object value ranges for certain objects.

Each NTCIP device shall provide the full, standardized object range support (FSORS) of all objects required by these specifications unless otherwise indicated below.

Object	Reference	Project Requirement
moduleTable	NTCIP 1201 Clause 2.2.3	Shall contain at least one row with moduleType equal to 3 (software).
maxTimeBaseScheduleEntries	NTCIP 1201 Clause 2.4.3.1	Shall be at least 28
maxDayPlans	NTCIP 1201 Clause 2.4.4.1	Shall be at least 20
maxDayPlanEvents	NTCIP 1201 Clause 2.4.4.2	Shall be at least 12
maxEventLogConfig	NTCIP 1201 Clause 2.5.1	Shall be at least 50
eventConfigMode	NTCIP 1201 Clause 2.4.3.1	The NTCIP Component shall Support the following Event Configuration: onChange, greaterThanValue, smallerThanValue
eventConfigLogOID	NTCIP 1201 Clause 2.5.2.7	FSORS
eventConfigAction	NTCIP 1201 Clause 2.5.2.8	FSORS
maxEventLogSize	NTCIP 1201 Clause 2.5.3	Shall be at least 200
maxEventClasses	NTCIP 1201 Clause 2.5.5	Shall be at least 16
eventClassDescription	NTCIP 1201 Clause 2.5.6.4	FSORS
maxGroupAddresses	NTCIP 1201 Clause 2.7.1	Shall be at least 1
communityNamesMax	NTCIP 1201 Clause 2.8.2	Shall be at least 3
numFonts	NTCIP 1203 Clause 2.4.1.1.1.1	Shall be at least 12
maxFontCharacters	NTCIP 1203 Clause 2.4.1.1.3	Shall be at least 255
defaultFlashOn	NTCIP 1203 Clause 2.5.1.1.1.3	The DMS shall support flash "on" times ranging from 0.1 to 9.9 seconds in 0.1 second increments
defaultFlashOff	NTCIP 1203 Clause 2.5.1.1.1.4	The DMS shall support flash "off" times ranging from 0.1 to 9.9 seconds in 0.1 second increments
defaultBackgroundColor	NTCIP 1203 Clause 2.5.1.1.1.1	The DMS shall support the black background color
defaultForegroundColor	NTCIP 1203 Clause 2.5.1.1.2	The DMS shall support the amber foreground color
defaultJustificationLine	NTCIP 1203 Clause 2.5.1.1.1.6	The DMS shall support the following forms of line justification: left, center, and right

defaultJustificationPage	NTCIP 1203 Clause 2.5.1.1.1.7	The DMS shall support the following forms of page justification: top, middle, and bottom
defaultPageOnTime	NTCIP 1203 Clause 2.5.1.1.1.8	The DMS shall support page "on" times ranging from 0.1 to 25.5 seconds in 0.1 second increments
defaultPageOffTime	NTCIP 1203 Clause 2.5.1.1.1.9	The DMS shall support page "off" times ranging from 0.1 to 25.5 seconds in 0.1 second increments
defaultCharacterSet	NTCIP 1203 Clause 2.5.1.1.1.10	The DMS shall support the eight bit character set
dmsMaxChangeableMsg	NTCIP 1203 Clause 2.6.1.1.1.4	Shall be at least 100.
dmsMessageMultiString	NTCIP 1203 Clause 2.6.1.1.1.8.3	The DMS shall support any valid MULTI string containing any subset of those MULTI tags listed in Table 3 (below)
dmsControlMode	NTCIP 1203 Clause 2.7.1.1.1.1	Shall support at least the following modes: local, central, and centralOverride
dmsSWReset	NTCIP 1203 Clause 2.7.1.1.1.2	FSORS
dmsMessageTimeRemaining	NTCIP 1203 Clause 2.7.1.1.1.4	FSORS
dmsShortPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.8	FSORS
dmsLongPowerRecoveryMessage	NTCIP 1203 Clause 2.7.1.1.1.19	FSORS
dmsShortPowerLossTime	NTCIP 1203 Clause 2.7.1.1.1.10	FSORS
dmsResetMessage	NTCIP 1203 Clause 2.7.1.1.1.12	FSORS
dmsCommunicationsLossMessage	NTCIP 1203 Clause 2.7.1.1.1.12	FSORS
dmsTimeCommLoss	NTCIP 1203 Clause 2.7.1.1.1.12	FSORS
dmsEndDurationMessage	NTCIP 1203 Clause 2.7.1.1.1.15	FSORS
dmsMemoryMgmt	NTCIP 1203 Clause 2.7.1.1.1.16	The DMS shall support the following Memory management Modes: normal and clearChangeableMessages
dmsMultiOtherErrorDescription	NTCIP 1203 Clause 2.4.1.1.1.20	If the vendor implements any vendor-specific MULTI tags, the DMS shall provide meaningful error messages within this object whenever one of these tags generates an error
dmsIllumControl	NTCIP 1203 Clause 2.8.1.1.1.1	The DMS shall support the following illumination

		control modes: Photocell, and Manual
dmsIllumNumBrightLevels	NTCIP 1203 Clause 2.8.1.1.1.4	Shall be at least 100
dmsIllumLightOutputStatus	NTCIP 1203 Clause 2.8.1.1.1.9	FSORS
numActionTableEntries	NTCIP 1203 Clause 2.9.1.1.1	Shall be at least 200
watcdogFailureCount	NTCIP 1203 Clause 2.11.1.1.1.5	FSORS
dmsStatDoorOpen	NTCIP 1203 Clause 2.11.1.1.1.6	FSORS
fanFailures	NTCIP 1203 Clause 2.11.2.1.1.8	FSORS
fanTestActivation	NTCIP 1203 Clause 2.11.2.1.1.9	FSORS
tempMinCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.1	FSORS
tempMaxCtrlCabinet	NTCIP 1203 Clause 2.11.4.1.1.2	FSORS
tempMinSignHousing	NTCIP 1203 Clause 2.11.4.1.1.5	FSORS
tempMaxSignHousing	NTCIP 1203 Clause 2.11.4.1.1.6	FSORS

Table 3: Modified Object Ranges and Required Optional Objects

25.5 MULTI TAGS

Each NTCIP device shall support the following message formatting MULTI tags. The manufacturer may choose to support additional standard or manufacturer-specific MULTI tags.

MULTI Tag	DESCRIPTION
f1	Field 1-time (12 hr)
f2	Field 1-time (24 hr)
f8	Field 8- day of month
f9	Field 9-month
f10	Field 10-2 digit year
f11	Field 11-4 digit year
fl (and /fl)	Flashing text on a line-by-line basis with flash rates controllable in 0.1-second increments.
Fo	Font
jl2	Justification- line-left
jl3	Justification- line-center
jl4	Justification- line- right
jp2	Justification- page- top
jp3	Justification- page- middle
jp4	Justification- page- bottom
mv	Moving text
nl	New line
np	New page up to 5 instances in a message (i.e. up to 6 pages/frame in a message)

MULTI Tag	DESCRIPTION
	counting first page)
pt	Page times controllable in 0.1-second increments

Table 4: Required MULTI Tags

25.6 DOCUMENTATION

NTCIP documentation shall be provided on a CD-ROM and will contain ASCII versions of the following Management Information Base (MIB) files in Abstract Syntax Notation 1 (ASN.1) format:

- The relevant version of each official standard MIB modules referenced by the device functionality.
- If the device does not support the full range of any given object within a standard MIB Module, a manufacturer specific version of the official standard MIB Module with the supported range indicated in ASN.1 format in the SYNTAX and/or DESCRIPTION fields of the associated OBJECT TYPE macro. The filename of this file shall be identical to the standard MIB Module except that it will have the extension “man”.
- A MIB module in ASN.1 format containing any and all manufacturer specific objects supported by the device with accurate and meaningful DESCRIPTION fields and supported ranges indicated in the SYNTAX field of the OBJECT-TYPE macros.
- A MIB containing any other objects supported by the device

25.7 ACCEPTANCE TESTING

The vendor will provide certification of NTCIP-compliance as part of the vendor’s pre-build submittal documentation. This certification shall be in the form of a comprehensive test plan and completed test report as performed by either the vendor or a third-party testing agency. The testing shall have been completed using industry accepted test tools such as the NTCIP Exerciser, Trevilon’s NTester, Intelligent Devices’ Device Tester, and/or Frontline’s FTS for NTCIP. Data capture files from the FTS software during the performance of the above testing shall be furnished upon request of the Engineer.

The Engineer can elect to perform additional NTCIP testing if desired. This testing shall be conducted on a production DMS in the vendor’s facility during the factory acceptance test. The vendor shall provide a written NTCIP test procedure to the Engineer a minimum of 30 days prior to the NTCIP testing.

25.8 INTERPRETATION RESOLUTION

If the Engineer or DMS manufacturer discovers an ambiguous statement in the standards referenced by this procurement specification, the issue shall be submitted to the NTCIP DMS Working Group for resolution. If the Working Group fails to respond within 90 days, the engineer shall provide an interpretation of the specification for use on the project.

26.0 As-Built Documentation

The Contractor shall provide to the Engineer the following documentation of the complete installed equipment prior to testing. Sufficient documentation shall be provided to reflect "as-built" conditions and to facilitate operation, maintenance, modification and expansion of the system or any of its individual components. Manufacturer supplied documentation which covers the intent of this requirement may be used, subject to the approval of the Engineer.

A. Operator's Manuals: A manual containing a general description and detailed operating and installation instructions shall be provided for each different type or model of equipment. Five copies of the manual shall include the following information:

1. A general description of the equipment including all information necessary to describe the basic use or function of the system components. This shall include a general block diagram presentation of the equipment. Where auxiliary equipment is required, tabular charts shall be included, list such equipment. These charts shall include the nomenclature physical and electrical characteristics and functions of the auxiliary equipment, unless such information is contained elsewhere in an associated manual. In the latter case, a reference shall be made to the location of the information pertaining to the auxiliary equipment.
2. The theory of operation of the system components in a clear, concise manner supported by simplified schematics, logic, data flow diagrams, one-function diagrams, etc. Timing and waveform diagrams and voltage levels shall be shown as required. A logical development shall be used starting with a system block level and proceeding to a circuit analysis. Circuit analysis shall be detailed whenever circuits are not normally found in standard text books. This application of new theoretical concepts shall be fully described. Where the design allows operation in a number of different modes, an operational description of each mode shall be included.
3. In simple, clear language, the routine of operation, from necessary preparations for placing the equipment into operation, to securing the equipment after operation. This section shall contain appropriate illustrations, with the sequence of operations presented in tabular form wherever feasible.
4. The manufacturer's recommended procedures and checks necessary for preventive maintenance. This shall be specified for pre-operation, weekly, monthly, quarterly, semi-annual, annual and "as required" checks as necessary to assure reliable equipment operation. Specification, including tolerances, for all electrical, mechanical, and other applicable measurement, adjustments, or both, shall be listed.
5. Data necessary for isolation and repair of failure or malfunctions, assuming the maintenance technicians to be capable of analytical reasoning using the information provided in the submittal information. Accuracies, limits, and tolerances for all electrical, physical or other applicable measurements shall be described. General instructions shall be included for disassembly, overhaul and reassembly, including shop specifications or performance requirements.
6. Detailed instructions shall be given only where failure to follow special procedures would result in damage to the equipment, improper operation, danger to operating or maintenance personnel. Consumption of excessive person hours, etc. Such instructions and specifications shall be included only for such maintenance as maybe accomplished by specialized technicians and engineers in a modern electromechanical shop. The instructions shall describe special test set-up, components fabrication, the use of special tools, jibs and test equipment.
7. A detailed physical description of size, weight, special mounting requirements, electrical connections, and all other pertinent information necessary for proper installation and use of the equipment shall be provided.
8. The parts list shall contain all information required to describe the characteristics of the individual parts, as required for identification. It shall include a list of all equipment within a group and list all assemblies, sub-assemblies and replacement parts of units. The tabular arrangement shall be an alphanumeric order of the schematic reference symbols and shall give the associated description, manufacturer's name and part number. A table of contents or some other convenient means shall be provided for the purpose of identifying major components, assemblies, etc.

9. Schematic diagrams shall be complete and accurate as required to supplement the text material and to allow the books to be a self-contained technical information source. Maximum size of these diagrams shall be limited to allow their use in close proximity to the equipment, in the class room, etc., part reference symbols, test voltages, waveforms and other aids to understanding of the circuits function shall be included on the diagrams. Test voltages, waveforms and other aids to understanding of the circuits function may be shown on either the simplified schematics and other drawings (as required in the above sections) on theory of operation or maintenance or on the schematic diagrams required for this section. The overall scope of information shall not be less, however, than that stated for the schematic diagrams.

B. Software Manuals

The DMS vendor shall provide manuals and data for the computer software system and components thereof. These shall include the following:

1. Computer programmer's manuals and computer user's manuals (5 copies each). Include manuals for any CPU language used by the Contractor for this project. Include instructions for performing a back-up of all software and message libraries.
2. Two original copies of the computer's operating system manual and compiler and assembly language manuals and an instruction manual for translating source to object code.
3. Manufacturer's documentation (including schematics) for all plug in circuit cards used in the microcomputer chassis.
4. Computer program logic in flow chart form (5 copies).
5. Narrative descriptions of programs and input output formats (5 copies).
6. Two copies of source programs, for master and sign controller software, shall be provided on CD-ROM. An unrestricted license for software use by the Department shall be provided to the Engineer.
7. DMS vendor shall provide the communication protocol used between the DMS master controller and the DMS sign controller for use by the Department without any restrictions.

C. Final Documentation

Final documentation shall reflect all field changes and software modifications and shall be provided before installation. Final documentation shall be approved prior to final system acceptance has begun. This document shall include drawings of conduit layouts, cable diagrams, wiring lists, cabinet layouts, wiring diagrams and schematics for all elements of the communications system. This shall also include detailed drawings identifying by cable type, color-coded function, the routing of all conductors (pairs) in the communications system. Upon completion of the installation, the Contractor shall submit these plans, maps, and/or drawings to reflect an as built condition, incorporating all changes made during installation, such as in pair identification and routing.

27.0 **Spare Parts Requirements**

The Contractor shall provide additional parts to create two (2) additional character matrixes, two (2) load modules to drive a character module, one (1) LED power supply, one complete sign controller unit and two (2) Lap Top maintenance units equal to the lap top units as defined in Article 3.15.3 with the delivery of each sign. The cost of additional parts/equipment shall be considered incidental to the price for each DMS.

28.0 **DMS Training**

Operational and maintenance training for the entire system shall be provided to designated personnel during installation, testing and debugging. This training shall be provided through practical demonstrations and other related technical procedures. Training shall be limited to a maximum of 15 people and shall be provided at a time and location approved by the Engineer. The training shall include, but not be limited to, the following:

1. **Hands-on operation of all sign control hardware**
2. **Explanation of all system commands, their function and usage.**
3. **Insertion of data**
4. **Required preventative maintenance**
5. **Servicing procedures**
6. **System trouble-shooting or problem identification procedures**

A minimum of 24 hours of instruction shall be provided for the operational and maintenance procedures for the system. The DMS vendor shall submit an agenda for the training and one complete set of training materials along with the qualification of proposed instructors to the Engineer for approval at least 30 days before the training is to begin. The Engineer will review material and approve or request changes. After approval, the vendor shall provide a minimum of 5 copies of the training material that will become the property of the Department after training period is over.

The DMS vendor shall record the entire training on DVDs and shall provide the recordings to the Engineer for later use. The training shall be conducted at District One Traffic Systems Center building where the control room is located, after the completion of all system integration tests. The schedule of training sessions shall be established by the DMS vendor, with the approval of the Engineer.

29.0 Warranty

The equipment and parts furnished for the DMS and DMS control system shall be new, of the latest model, fabricated under high quality standards.

Equipment and parts furnished for the DMS shall be warranted by the manufacturer to be free of defects in assembly or fabrication and materials for a minimum of five years from the date of acceptance and shall be warranted for quality of work for twelve months from the date of final acceptance. If component manufacturer's warranties are for a longer period, they shall apply. Any parts or equipment found to be defective during the warranty period shall, upon the concurrence of the defect by the manufacturer, be replaced free of charge.

The Engineer shall be furnished with a certification stating that the equipment, parts and material furnished for the DMS and DMS control system complies with all the provisions of this special provision. If there are any items which do not comply with this special provision, then a list of those exceptions shall be detailed on the certification.

All manufacturer's warranties and guarantees for the dynamic message sign system shall be transferred to the Department on the date of final acceptance.

30.0 Method of Measurement

The DMS Front Access, Full matrix, Color, NTCIP 1203 V2 shall be paid for at the contract unit price as each which cost shall include furnishing all labor, materials, documentation, warranties, tools and equipment to remove existing DMS and install, test, and make the location operational with the specified DMS Front Access, Full matrix, Color, NTCIP 1203 V2 in this pay item.

31.0 Basis of Payment

This work shall be paid for at the contract unit price each for DMS Front Access, Full matrix, Color, NTCIP 1203 V2 which price shall include furnishing and installing the DMS sign, documentation, warranties, spare parts, training, and diagnostic software as directed by the engineer.

SDM2 DMS BATTERIES (TELESPOT)

Description. This item shall consist of furnishing and installing a new lead acid battery, 12 volts, 7AH in an existing line matrix Telespot DMS. Included in this item is the removal and proper disposal of the existing 12 volt, 7AH lead acid battery.

It shall be the contractor's responsibility to verify the dimensions of the existing space to ensure the new battery will fit in the existing space.

Basis of Payment. This work shall be paid for at the contract unit price each for DMS Batteries (Telespot) and for which price shall be payment in full for all labor and materials necessary to complete the work as described above.

SDM3 DMS BATTERIES (SKYLINE)

Description. This item shall consist of furnishing and installing Nine (9) 12 volt, 105 AH valve regulated, sealed lead acid AGM batteries in an existing Battery Backup Unit (BBU). Included in this item is the removal and proper disposal of the existing lead acid batteries.

It shall be the contractor's responsibility to verify the dimensions and weight limitation of the existing shelves to ensure the new batteries will fit and not exceed the weight limits of the existing space.

Basis of Payment. This work shall be paid for at the contract unit price each for DMS Batteries (Skyline) and for which price shall be payment in full for all labor and materials necessary to complete the work as described above.

SE01 ELECTRIC SERVICE UPGRADE AND GROUNDING

Description. The Contractor shall perform the electric service and grounding modification as specified to surveillance locations as designated by the Engineer. (This work is for additional locations, over and above the 50 locations to be upgraded under routine maintenance).

Work Description. The contractor is responsible for scheduling the work and for coordinating with the engineer whenever Engineer-witness functions are required. The Contractors shall also advise the engineer when each location is complete and shall provide a written certification to that effect. The Engineer reserves the right to require a final inspection of the modification at any or all of the locations certified as complete. Should deficiencies be found upon inspection, a corrective work list will be prepared.

The surveillance installations being modified shall be kept operational at all times except as expressly allowed herein or otherwise permitted by the Engineer. The Contractor shall be responsible for all traffic control and temporary provisions required for the work, all at no additional cost to the pay item. All cable, conduit, fittings and accessories shall be new. All materials and work shall be in conformance with the requirements of applicable contract specifications and article 250 of the National Electrical Code.

The Contractor shall be responsible for coordination with the Electric Utility as necessary and shall be responsible for reporting any account modifications arising from the work to the Engineer in a timely manner. Although it is anticipated that all service agreements and accounts will remain as-is, if new agreements are required, the Contractor shall facilitate coordination between the Electric Utility and the Engineer, with the Department to sign any appropriate new agreements.

The work will generally include:

- Replacement of the electric service entrance equipment and cables
- New grounding of the service
- New feeder conductors from the service disconnect to the controller cabinet
- Cabinet grounding modifications
- Supplementary ground electrodes at handholes
- Extension of equipment ground wires to all poles, posts, handholes, etc.
- Bonding of equipment ground to all exposed metal parts
- Testing and documentation

Replace Electric Service Entrance

The work shall include the removal of the existing service disconnecting means and the service conductors and shall include the furnishing and installing a new pole-mounted or pedestal-mounted service disconnecting means and new service conductors, based on the manner of the existing service. The new electric service disconnect, cables and the service connection shall be in accordance with details included herein. Unless otherwise indicated, the pole-mounted electric service box provided for these installations shall be Type B1 (equipped for 240/120 V. – 2 W service), shown in Figure L-3A, Volume 1, Article 7, page 20, unless specified otherwise by the Engineer to meet special requirements of certain locations.

Provide New System Ground of Electric Service

The work shall include the installation of a new system ground, connected to the ground bar of the service disconnect, using one or more ground rod grounding electrodes, or other means approved by the Engineer. The system ground shall have a resistance to earth not to exceed 10 ohms without connection to the additional electrodes established at poles or other points at the surveillance/CMS signal location. The system ground resistance shall be verified by a contractor test, using the fall-of potential method and witnessed and approved by the engineer, with a record of the test entered by the Contractor and signed by the Contractor and the Engineer. Should more than one electrode be required to establish a low enough resistance, additional electrodes shall be connected to the grid, with re-testing. All ground electrode connections shall be exothermically welded. Ground rods and grounding electrode conductors shall be as specified and detailed.

The service grounded circuit conductor (which may or may not be a system neutral) shall be bonded to the system ground at the service disconnect and shall be isolated from ground throughout the remainder of the electrical distribution.

Extend New Conductors to Controller

A new ground terminal bar shall be installed at the surveillance cabinet and this bar shall be bonded to the cabinet enclosure. The work shall include the replacement of the existing feeder and the extension of new feeder conductors from the service disconnect to the surveillance cabinet. The cable will be a multi-conductor jacketed cable as specified and it shall include a green-insulated ground wire to bond the service ground bar to the controller cabinet ground bar. The Contractor shall confirm the integrity of the existing feeder conduit run, and shall clean the run before installing the new feeder. If the size of the conduit is demonstrated to be inadequate for the new feeder cable or if it is demonstrated as not re-usable for some other reason and no other alternative is feasible, the contractor shall use a new feeder conduit run, as part of this pay item, with all cable work remaining as the Contractor's responsibility at no additional cost to the pay item.

Cabinet Grounding Modifications

The Contractor shall confirm the presence of a terminal bar, with suitable terminals, for the grounded circuit conductor (white wire) at the controller cabinet and shall assure isolation of this bar from the cabinet enclosure and other grounded parts. If the existing bar is inadequate or is not isolated properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items. Similarly, the Contractor shall confirm the presence of a ground bar, with suitable terminals, which is bonded to the cabinet enclosure and grounded metal parts. If the existing ground bar is inadequate or is not bonded properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items.

Extension of Equipment Ground

The Contractor shall extend an equipment ground conductor from the ground bar in the controller cabinet to distributed elements of the system, bonding the equipment ground conductor to all handhole frames, metal poles and other enclosures, metal conduit, etc., including any existing supplemental ground rods that may be in place. The Contractor shall assure that good equipment ground continuity and a low-impedance ground return path is established throughout for all exposed metal parts of the installation.

It is not the intent of this work item to require re-cabling of the surveillance load equipment to achieve grounding. In all cases, a green-insulated ground conductor shall be used whenever possible, and only if conduit space will not accommodate an insulated conductor will a bare conductor be allowed. A common conductor may be employed for multiple load circuit cables in a given conduit, but an equipment ground conductor shall be run with or shall encircle each set of circuit conductors extended from the controller cabinet.

Recognizing the intent to leave existing conductors in place and operations, the contractor may chose from among identified and prioritized acceptable alternative to affect the grounding modifications:

If an existing conduit will accommodate the installation of a ground wire, the ground wire shall be installed within the conduit with the circuit conductors. Existing conductors should only be withdrawn from a conduit run to facilitate pulling of the ground wire if absolutely necessary.

If an existing metal conduit will not accommodate the required ground wire, and if the Contractor can identify end-to-end electrical continuity of the conduit, the Contractor may bond to the conduit externally in an approved manner to establish ground continuity, thus using the metal conduit as the equipment ground conductor.

If a given conduit run is demonstrated to be damaged and electrically discontinuous in the presence of the Engineer, and if no other alternative is feasible, the Engineer will authorize a new conduit run, to be paid under separate pay item, with all cable installation to remain part of the grounding modification work at no additional cost to the pay item. When a new conduit is installed, an insulated ground conductor must be

installed within, together with the circuit conductors, regardless of the ground continuity of the new conduit, and the new conduit shall be appropriately bonded to the equipment ground.

Bonding

The Contractor shall establish equipment ground bonding to the cover frame of every handhole with an approved connection. The contractor shall establish equipment ground bonding at every metal pole, post or other enclosure or device, also with an approved connecting. At poles or post bases, it may be possible to install washers, lugs, and extra nuts where extra anchor bolt protrusion allows it. Otherwise, poles may be drilled and tapped and fitted with appropriate ground lugs. Connections at poles and other enclosures shall be pigtailed from splices whenever more than one ground conductor is connected so that ground continuity is not dependent upon ground lug connection. Splices of ground conductors (in lieu of exothermic weld connectors) will be permitted at poles and other such connection point above grade, with splices to be made using suitable copper crimp sleeves and heat-shrink insulated caps as specified.

Testing and Documentation

As noted above, the system ground resistance to earth shall be tested, in isolation from equipment ground extensions from that point. Testing shall be performed by the Contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the contractor and witnessed by the Engineer.

Method of Measurement. Each additional surveillance grounding and service upgrade performed as specified and inspection report submitted and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This item shall be paid at the Contract unit price each for ELECTRICAL SERVICE UPGRADE AND GROUNDING, which shall be payment in full for the work described herein.

SE02 ELECTRICAL CABLE IN CONDUIT, 4C/ NO. 18 SHIELDED LOOP DETECTOR

Description. This work shall consist of furnishing materials and labor for installation of shielded loop detector cables in conduit as specified herein and indicated by the Engineer, complete with all identification, terminating and testing.

Materials.

General

Lead-ins shall be Conoga 30003 or equal cable. The jacket of high density polyethylene shall be rated to 600 volts in accordance with UL 83 Section 36.

All cables shall be UL listed.

Unless otherwise indicated all cable shall be rated 600 volts.

The cable shall be rated 90 degrees C. dry and 75 degrees C. wet and shall be suitable for installation in wet and dry locations, exposed to the weather, and shall be resistant to oils and chemicals.

The UL listing mark, cable voltage, insulation type and ratings, as well as the cable size shall all be clearly printed on the cable in a color contrasting with the insulation color.

Conductors:

Conductors shall be #18 awg 7X.0152" un-coated copper.

Conductors shall meet the requirements of ASTM Designation B-8 as applicable.

Unless otherwise indicated, all conductors shall be stranded and twisted 4 turns per foot.

The cable shall be an assembly of pairs of left hand lay twisted insulated conductors, with a core filled with a petroleum base flooding compound, overlapped conductive tape shield and a black high density polyethylene jacket overall. This cable shall meet the requirements of IEEE Standard 383.

Insulation:

The conductors shall be coded as follows: black-red-white-green

Cable insulation shall incorporate polyvinyl chloride (PVC) with a clear nylon covering overall as specified and the insulation shall meet or exceed the requirements of ICEA S-61-402, NEMA Standard Publication No. WC-5, UL Standard 83, as applicable.

Unless otherwise indicated, cable conductors shall be solid full color coded via insulation color.

Quality Control:

Submittal information shall include demonstration of compliance with all specified requirements.

All cables shall be delivered to the site in full reels. Cable on the reels shall be protected from damage during shipment and handling by wood lagging or other means acceptable to the Engineer. Reels shall be tagged or otherwise identified to show the UL listing.

Installation. The loop lead-in shall be a Canoga 30003 or equal cable. The loop lead-in shall be barrel sleeved, crimped, soldered and protected by heat shrinkable tubing to the loop #14 wire. Lead-ins shall be twisted in such a manner so as to prevent mechanical movement between the individual cables. Lead-ins shall be brought into a cabinet or handhole at the time the induction loop is placed in the pavement. Loops located over 1000 feet from cabinet require four (4) turns of No. 14 wire.

Lead-in cable Canoga 30003 or equivalent will be installed where the lead in length from point of interception to the point of termination exceeds 150 feet.

Where lead in runs are less than 150 feet the loop wire will be utilized as lead in to the point of termination w/o splices, being twisted 5 turns per foot. The loop wire will be paid for as "lead in" from last point of sawcut in pavement at dive hole to point of termination.

Loop lead-ins placed in handholes shall be coiled, taped and hung from the side of the handhole to protect against water damage. Any other method of installation will require prior written approval of the Engineer. Each loop lead-in shall be color coded and tagged in each handhole through which it passes. The loop lead-in shall be color coded and tagged at the core hole, in each junction box it passes through and at the termination point in the cabinet.

TRAFFIC SYSTEMS CENTER LOOP SPLICING REQUIREMENT

<u>MAINLINE LOOPS</u>		<u>METERING LOOPS</u>			
Lane 1	Blue	Lane 4	Violet	Loop 1	Green
Lane 2	Brown	Exit	Black	Loop 2	Yellow
Lane 3	Orange	Entrance	White	Loop 3	Red

When 2 or 3 loops are installed on an exit or entrance ramp the loop color code shall conform to the mainline loop color code and shall be marked as entrance or exit ramp loops.

In addition to color codes each loop shall be identified with a written label attached to the loop wire, or lead-in wire. The tags shall be Panduit #MP250W175-C or equivalent. All wires and cables shall be

identified in each handhole or cabinet the cable passes through, or terminates in. The labels shall be attached to the cable by use of two cable ties.

Testing. After installation, the cable shall be tested as approved by the Engineer. Cable failing to pass the test shall be replaced with new cable at no additional cost.

Pay Item SE1 Continued:

Method of Measurement. The cable shall be measured for payment in linear foot in place. Measurements shall be made in straight lines between changes in direction and to the centers of equipment. All vertical cable and permissible cable slack shall be measured for payment. A total of six (6) feet of slack shall be allowed for the end of a run terminating at a panel and four (4) feet will similarly be allowed when terminating at a wall-mounted panel. Additional vertical distance for the height of conduit risers, etc., as applicable, will be measured for payment for equipment so mounted.

Basis of Payment. This work shall be paid at the Contract unit price per linear foot furnish and installed for ELECTRICAL CABLE IN CONDUIT, 4/C NO. 18 SHIELDED LOOP DETECTOR

SEC1 ETHERNET MEDIA CONVERTER

Description. The Contractor shall furnish and install a field hardened Ethernet Media Converter, copper to fiber, at a Surveillance or DMS cabinet as shown on the plans or directed by the Engineer. The Ethernet media converter shall be equal to or exceed Rugged Com Rugged RMC part number RMC-HI-TXFXSM. The contractor shall supply a match pair to connect devices which are 200 feet or more from the nearest Ethernet Managed Switch. The contractor shall supply the Ethernet cat 5e patch cords as necessary to connect the field device to the Ethernet media converter and to the Ethernet managed switch.

Basis of Payment. This work shall be paid for at the contract unit price each for Ethernet Media Converter and for which price shall be payment in full for all the labor and materials required to complete this work as described herein.

SES1 ETHERNET MANAGED SWITCH

Description. The Contractor shall furnish and install a field hardened Ethernet Managed Switch at a DMS or Surveillance cabinet as shown on the plans or as directed by the Engineer.

General Requirements. The Ethernet switch shall be an environmentally hardened Ethernet switch compliant with IEEE 802.3 (1-Mbps) and IEEE 802.3u (100 Mbps) as manufactured by RuggedCom, Series RS900G or approved equal.

Operating Environment. The Ethernet switch shall be capable of operating properly over an ambient temperature range of -40°C to +85°C without the use of internal or external cooling fans in accordance with IEC 60068-2-1 and 60068-2-2. The Ethernet switch shall be capable of operating properly in relative humidity conditions of 95% non-condensing at 55°C in accordance with IEC 60068-2-30. The Ethernet switch shall meet the environmental requirements of traffic control equipment in accordance with NEMA TS 2 (1998), Section 2: Environmental Requirements. Specifically NEMA TS 2 1998 (Section 2.2.8)

- a Vibration in each of the 3 mutually perpendicular planes.
- b Vibration frequency sweep of 5 to 30 Hz
- c Vibration strength = 0.5g
- d Duration = 3 hours, 1 hour at each plane

The Manufacturer shall provide evidence of independent testing verifying performance. In general, the Ethernet Switch shall comply with the environmental requirements outlined in Table 1. The Ethernet switch shall be capable of operating properly when exposed to radiated electric fields of up to 10 V/m continuously and magnetic fields of up to 40 A/m continuously. In general, the Ethernet switch shall comply with the EMI Immunity requirements given in IEC 61850-3 and IEEE1613. The Ethernet switch shall also pass the minimum EMC immunity requirements of EN61800-3. EN61800-3 A11 is the IEC standard for EMC emissions and immunity requirements for Adjustable Speed Power Drive Systems.

Port Requirements. The Ethernet switch shall have 8 - 10/100Base TX ports, 2 – 100Base X fiber optic ports. All fiber optic link ports shall be capable of Multimode or Single mode. The Ethernet switch shall have the option of both small form pluggable (SFP) optics and fixed (soldered on) optics. Single mode optics shall support distances up to 70km. The Ethernet switch shall support the following requirements and options:

10/100Base TX ports:

- RJ45 connectors
- Cable type: Category 5, unshielded twisted pair (CAT 5 UTP)
- Segment Length: 100m
- Auto-negotiation support (10/100Mbps)
- Auto MDIX crossover capability
- TVS (Transient Voltage Suppression) between Line +/-, Line+/- ground, to protect the circuitry
- Full Duplex operation (IEEE 802.3x)

100 Base X Fiber Optic ports:

- SFP
- St connectors Single mode
- Optical Characteristics 1310 nm Single mode, 1550 nm Single mode
- Support fiber type 9/125um Single mode fiber
- Optical budget single mode fiber: min. 34.5db @ 1310nm
- Full duplex operation (IEEE802.3x)

Networking Requirements. The Ethernet switch shall support automatic address learning of up to 8192 MAC addresses. The Ethernet switch shall support the following advanced layer 2 functions:

- IEEE 802.1Q VLAN, with support for up to 255 VLANs and 4096 VLAN ID's.
- IEEE 802.1p priority queuing
- IEEE 802.1w rapid spanning tree
- IEEE 802.1Q-2005 MSTP (formerly 802.1s)
- IEEE 802.1Q-2005 standard GMRP
- IEEE 802.3x flow control
- IEEE 802.3ad-Link Aggregation
- IGMPv2 with 256 IGMP groups
- Port Rate Limiting
- Configuration via test file which can be modified through standard text editor
- Forwarding/filtering rate shall be 14,880 packets per second (PPS) for 10 Mps, 148,800 for 100Mps, 1,488,000 for 1000 Mps
- DHCP Option 82

Network Management Functionality Requirements. The Ethernet switch shall provide the following network management functions:

- SNMPv2, SNMPv3
- RMON
- GVRP
- Port Mirroring
- 802.1x port security
- SSL – Secure Socket Layer
- SSH – Secure Shell
- TFTP
- Network Time Protocol (SNTP)
- Simple Network Time Protocol (SNTP)
- Management via web or Telnet
- Built in Protocol analyzer which enables traces to be run from within the Ethernet switch operating system. Must be able to forward traces to an IP address or UDP port

Traces for must include but not be limited to the following: STP, MAC, Link, IGMP, GVRP, PPP, Transport, DHCPRA, 802.1X, WEBS, SNMP, IP, TacPlus, Radius, FORW, IPASSIGN, TRANSPORT

Additionally, the Ethernet switch shall demonstrate to provide sub 15 ms failover per Ethernet switch hop in a ring topology.

Programmable Critical Failure Relay. The Ethernet switch shall provide a programmable critical failure out relay that may be configured to activate upon critical error detection such as loss of link or detection of critical system errors. This function shall be user enabled and programmable. The output contacts shall be available in a Form-C configuration with Max Current at 2A@250 VAC, .15A@125VDC, 2 @20VDC.

Power Supply Requirements. The Ethernet switch shall be supplied with provisions for operation at the following power supply inputs, 85 to 264 VAC (50/60Hz). The power supply shall be internal to the Ethernet switch. Power supply shall have two stage isolation accomplished via two transformers which step down from primary AC/DC to VDC. A power cord of not less than 5 feet in length shall be supplied as well. The Ethernet switch shall require no more than 15W of power.

'Hipot' Testing in the field. The Ethernet switch shall allow for dielectric strength ('hipot') tests in the field, in accordance with IEC 60255-5, by trained personnel. It shall be capable of enduring a test voltage of at least 2kVrms on power supply inputs above 60V and 0.5kVrms on power supply inputs below 60V. A removable grounding wire shall be provided to allow disconnecting of any transient suppression circuitry at the power supply input to allow for 'hipot' testing without activating the transient suppression circuitry.

Mounting Requirement. The Ethernet switch shall provide options for DIN Rail mounting or panel mounting via brackets.

Warranty. The Ethernet switch shall be warranted for defects in material and workmanship for five (5) years after shipment. The Warranty shall include software updates and 7 x 24 phone support for the 5 year warranty period.

Environmental Requirements. The Ethernet switch shall comply with the atmospheric, vibration, shock and bump requirements outlined in Table 1. This compliance shall be demonstrated by type withstands tests (i.e. 'type tests') as outlined in Table 1 and summarized in a Type Test Report per the test report requirements of each of the standards given in Table 1.

Table 1: Environmental Tests				
Test	Description		Test Level	Severity
IEC 60068-2-1	Cold Temp	Test Ad	-40°C, 16 hours	N/A
IEC 60068-2-2	Dry Heat	Test Bd	+85°C, 16 hours	N/A
IEC 60068-2-30	Humidity	Test Db	95% (non condensing), 55 deg. C, 6 cycles	N/A
IEC 60255-21-1	Vibration	Test Fc		Class 1
IEC 60255-21-2	Shock	Test Ea.		Class 1
IEC 60255-21-2	Bump	Test Eb		Class 1

Safety Requirements/Agency Approvals. The Ethernet switch shall comply with the following electrical safety requirements or equivalents: UL 60950 or CSA C22.2 No. 60950 (safety requirements for IT equipment). The Ethernet switch shall also have CE (Europe) qualification. The Ethernet switch shall also comply with FCC Par 15 Class A for EMI emissions.

Method of Measurement. The Ethernet Managed Switch shall be measured each for payment when furnished, installed, configured, warranted, made fully operational, and tested as detailed herein.

Basis of Payment. This work will be paid for at the contract price, each, for **ETHERNET MANAGED SWITCH**, of the type specified, which shall be for the work as specified herein

SI01 INSPECTION, AUTOMATIC SUPPRESSION SYSTEM

This item shall consist of scheduling a semi-annual inspection, functional test, and certification of the Automatic Suppression Alarm System located at the Traffic Systems Center.

All work shall be performed by a trained and certified fire alarm technician twice during each contract year in accordance with the manufactures recommendations, local code and national code.

The following procedure minimum shall be conducted during each inspection;

1. clean smoke detectors
2. calibration of smoke detectors
3. actual alarming of detectors and manual pull stations
4. check control panel electrical wiring for grounds and shorts
5. check control panel battery standby and charger
6. check alarm devices such as bells and horns
7. check Halon storage tanks weight and pressure
8. Test interlocking equipment for shut down
9. check other specialized components as needed
10. submit written reports to purchaser with recommendations for corrections, additions, deletions, or other changes to the system.

Basis of Payment. This item shall be paid at the contract unit price each for INSPECTION, AUTOMATIC SUPPRESSION SYSTEM, which price be payment in full for all work described herein and as directed by the Engineer.

SJ01 JUNCTION BOX, STAINLESS STEEL

Description. This item shall consist of furnishing and installing at a specific location a junction box with cover, Type "J", continuously welded, 1/4" thick, Type 316 stainless steel as specified.

Installation Details. All junction boxes shall be water tight. Pre-drilled holes shall be provided for the applicable conduit size and location. Unless otherwise specified, conduits terminating at stainless steel boxes shall be terminated in conduit hubs.

The cover shall be recessed within an outside frame, having a water-tight gasket, and mounted flush with the surface of this frame. Recessed stainless steel slot head screws shall secure the cover.

Junction Box Embedded in Concrete. For example: A stainless steel continually welded box 41" X 12" X 12" with stainless steel 1/4" type 316 cover and neoprene gasket with a minimum of ten (10) 3/8" X 3/4" flat head stainless steel slotted screws - Reference Traffic Surveillance Typical Drawings TY-1TSC-663 #2 through #13 drawings.

Basis of Payment. This work will be paid at the contract unit price each for furnishing and installing a JUNCTION BOX, STAINLESS STEEL, which price shall be payment in full for all labor and materials necessary to complete the work as described above.

SLP1 LIGHTNING PROTECTION FOR COMMUNICATION LINES

Description. This item shall consist of furnishing and installing stud mounted lightning protection on non-polarized balanced telephone pairs, as directed, in writing, by the Engineer.

The Contractor shall furnish and install EDCO Surrestor SRA-64C-008 D mounted on brackets for installing multiple unit of four or eight stud mounted in line devices. The mounting brackets shall be bonded to an earth ground. The Surrestor shall be non-polarized unit intended for balanced telephone line operation. The Surrestor shall provide two-stage protection, differential mode protection, common mode protection, automatic recovery, fast response time and be flame retardant epoxy encapsulated. Miscellaneous hardware and mounting will not be paid separately but shall be considered as incidental to the cost of the item. Surrestor shall be mounted in existing surveillance cabinet.

Basis of Payment. This work shall be paid at the contract unit price each for LIGHTNING PROTECTION FOR COMMUNICATION LINES, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SLP2 LIGHTNING PROTECTION FOR INDUCTION LOOP DETECTORS

Description. This item shall consist of furnishing and installing stud mounted lightning protection on existing induction loops in existing surveillance cabinets, as directed, in writing, by the Engineer.

The Contractor shall furnish and install EDO Surrestor SRA-16C-1 mounted on brackets for installing multiple units of four or eight stud mounted inline devices. The mounting bracket shall be bonded to an earth ground.

The SRA-16C-1 shall be a three terminal device, two of which are connected across the loop inputs of the detector for differential mode protection and the third terminal grounded to protect against common mode damage. Differential mode surges (induced voltage across the loop detector input terminals) shall be clamped by semiconductor array instantly. Common mode surges (induced voltages between the loop leads and ground) shall be handled by a three element gas discharge tube which fires at 400 VDC and thereafter clamps the two loop leads to 30 volts in respect to ground. The Surrestor shall be mounted in existing surveillance cabinet. Miscellaneous hardware and mounting will not be paid separately but shall be considered as incidental to the cost of this item.

Basis of Payment. This work shall be paid at the contract unit price each for LIGHTNING PROTECTION FOR INDUCTION LOOP DETECTORS, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SP01 PAINT SURVEILLANCE INSTALLATION

Description. This item shall consist of painting an individual ramp metering locations or surveillance cabinets at a specific location as directed by the Engineer.

These items shall conform with of the Recurring Special Provisions for Traffic Surveillance (TSC T721#1) except as revised herein. The cleaning and preparation of the surface to be painted in these items shall be as follows: All painted surfaces shall be cleaned by mechanical means removing all loose or flaking paint and rust. The cleaned surface shall be free of all visible oil, grease, dirt, dust, rust, paint, oxides, and other foreign matter except for staining all debris shall be cleaned up. Vacuuming and sweeping or blowing away of the material is not allowed. All cleaned parts must be primed with an approved primer. This work shall be completed between May 1 and October 15 of the calendar year. Basis of payment is each for furnishing all labor, materials, equipment, and clean up for painting the above pay items.

Note: The Contractor is required to paint individual expressway cabinets a color other than federal yellow. Color code for individual locations shall be determined prior to starting work.

At ramp metering locations the Contractor shall be required to paint control cabinet, signal heads, flashing beacons, and AC service installation.

Aluminum signal parts, except doors, shall have minimum 2 coats of durable paint, final coat federal yellow.

Traffic signal doors and visors shall have minimum 2 coats of durable paint, final coat dull black in color.

Any steel or iron parts or fittings shall have one coat of approved primer and 2 coats of federal yellow.

Ramp control cabinets are lime green in color.

Special Instructions

- **Painting Date** - At the completion of the work, the Contractor shall stencil in black color paint the date of painting the cabinet. The letters shall be capitals, not less than 1 inch and not more than 2 inches in height.

The stencil shall show the month and year in which the painting was completed. This shall be stenciled at bottom front of the cabinet facing traffic flow.

- **Cleanup** - all surfaces painted inadvertently shall be cleaned immediately.

Basis of Payment. This work shall be paid at the contract unit price each for each PAINT SURVEILLANCE INSTALLATION as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SP02 PAINT TRAFFIC SIGNAL MOUNTING HARDWARE

Description. This item shall conform with Section 840 of the Standard Specifications for Road and Bridge Construction and highway standard 2371 "Details for Mounting Traffic Signals" except as revised herein. All connecting hardware and mounting brackets shall be painted yellow in accordance with AASHTO M111. The basis of payment is each for furnishing and installing the mounting hardware.

Basis of Payment. This work shall be paid at the contract unit price each for PAINT TRAFFIC SIGNAL MOUNTING HARDWARE (1 Face: TSC) as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SPB1 POST BASE, TRAFFIC SIGNAL

Description. This item shall conform with section TSC T401#1 of the Recurring Special Provisions for Traffic Surveillance for traffic control item and the painting and base requirement of pay item of this contract. The basis of payment is each for furnishing and installing a traffic signal post base/or barrier wall post bracket where necessary.

Basis of Payment. This work shall be paid at the contract unit price each for POST BASE, TRAFFIC SIGNAL, as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SPG1 POST, GUARD

Description. This item shall consist of furnishing and installing a 10 foot length of 6 inch diameter, galvanized steel pipe, filled with concrete buried vertically 5 feet deep in the ground, as directed by the Engineer to protect the Traffic Systems Center cabinet installation from vehicular damage.

Basis of Payment. This item will be paid at the contract unit price each for furnishing and installing POST, GUARD completely in place. Digging holes, transportation, handling, concrete and miscellaneous items will not be paid for separately but shall be considered incidental to the cost of this item.

SPT1 POST, TRAFFIC SIGNAL, 1' TO 3'-6"

Description. This item shall conform with section 832 of the Standard Specifications for Road and Bridge Construction except as revised herein. This item shall consist of furnishing a new yellow painted traffic signal Post 1' to 3'-6" in length together with a painted yellow cast iron octagonal in shape base. The Contractor shall use a fabric post tightened to attach the post to the base. If the paint on the post is removed or damaged by using a chain post tightened exposing the base metal, the post shall be rejected and replaced with a new post. During fabrication of the post necessitating the threading of the post, the bare metal shall be immediately cleaned to remove all cutting solvents and oils, then spray painted with two coats of an approved yellow. If the post arrives with any rust showing, it shall be sent back to the fabricator. No more than three-fourths (3/4) inch of thread shall be allowed to protrude above the post base. Bases shall be octagonal in shape, approximately fourteen (14) inches high and sixteen (16) inches across the flat sides at the bottom. All bases shall be designed to accept five-eighths (5/8) inch diameter anchor bolts evenly spaced in a twelve and one half (12-1/2) inch to thirteen (13) inch diameter. Basis of payment is each for furnishing and installing the traffic signal post.

Basis of Payment. This work shall be paid at the contract unit price each for TRAFFIC SIGNAL POST, 1' TO 3'- 6" – as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SPW1 POST, WOOD

Description. This item shall consist of furnishing, installing a 6" x 6" x 16'-0" wood posts at ramp metering locations shown on the plans, or as directed by the Engineer.

Material. Each post shall be of southern pine conforming to Article 707.09 of the Standard Specifications for Road and Bridge Construction. The preservative used in the treatment of the wood posts shall be a solution of pentachlorophenol meeting the requirement of Article 707.12 of the Standard Specifications.

Installation Details

The posts shall be placed vertically in a vertical hole not exceeding 12 inches in diameter and not less than 5 feet deep. The post shall be placed in the center of the hole and backfilled with stone screenings thoroughly tamped in 12-inch lifts. The stone screenings shall conform to Article 704.01 (Gradation CA 6) of the Standard Specifications. The post shall be vertical after the tamping.

Under no circumstances will the sawing off of any part of a post be permitted after the preservative has been applied.

Basis of Payment. This work will be paid at the contract unit price each for WOOD POST, of the length specified, which price shall be payment in full for furnishing and erecting the post, digging and backfilling the post hole.

SR01 RADAR VEHICLE DETECTOR

1. GENERAL

- 1.1 The purpose of this specification is to describe the minimum requirements of a Radar Vehicle Detector (RVD)
- 1.2 All work performed shall conform to the requirements of the Department's Standard Specifications (Standards) and Standard Drawings, unless otherwise shown on the contract Drawings or noted in the contract Special Provisions.
- 1.3 The Contractor shall be responsible for coordinating and monitoring the schedule of the installation of the RVD.
- 1.4 This work shall consist of furnishing all labor, materials, equipment and testing to supply and install a Radar Vehicle Detector in accordance with the contract drawings and these special provisions.

2. General Description

- 2.1 The RVD shall be easy to install and remove, and shall be fully programmable to support a variety of applications.
- 2.2 The RVD shall be self-contained and require no external controllers and shall internally calculate all required traffic parameters.
- 2.3 The RVD shall be furnished with the necessary software for installation in a portable PC for set-up.
- 2.4 All Equipment and component parts furnished shall be new, be of the latest design and manufacture, and be in an operable condition at the time of delivery and installation. All parts shall be of high quality workmanship, and no part or attachment shall be substituted or applied contrary to the manufacturer's recommendations and standard practices.

- 2.5 The design shall be such as to prevent reversed assembly or improper installation of connectors, fasteners, etc. Each item of equipment shall be designed to protect personnel from exposure to high voltage during equipment operation, adjustments, and maintenance.
- 2.6 The designed Mean Time between Failures (MTBF) of the RVD unit, operating continuously in their application, shall be 10 years of longer.

3. Environmental Conditions

3.1 Except as stated otherwise herein, the equipment shall meet all its specified requirements during and after subjecting to any combination of the following:

- Ambient temperature range of -37 to +74 degrees C
- Relative humidity from 5 to 95 percent, non-condensing
- Vibration at 0.5g RMS up to 30 Hz in accordance with IEC 68-2-30 (test Fc), NEMA TS-1 (Section 2.1.12), or approved equivalent.
- Shock at 10g 11mSec half sine wave in accordance with IEC 68-2-27 (test a), NEMA TS-1 (Section 2.1.13), or approved equivalent.
- Winds up to 100 MPH
- Rain and other precipitation up to 100mm/h
- Power surge of ± 1 kV surge (rise time = 1.2 μ sec, hold = 50 μ sec) applied in differential mode to all lines, power and output, as defined by IEC 1000-4-5 and EN 61000-4-5 standards.
- Wrong power polarity protection

3.2 The design shall be inherently temperature compensated to prevent abnormal operation. The circuit design shall include such compensation as is necessary to overcome adverse effects due to temperature in the specified environment range.

3.3 Except as may be otherwise stated herein for a particular item, no item, component, or subassembly shall emit a noise level exceeding the peak level of 55 dBa when measured at a distance of 1 meter away from its surface.

3.4 The detector shall include surge protection in accordance with IEEE Standard C62.41-1980 Category C.

3.5 The microwave radar detector shall be resistant to vibration in accordance with IEC 68-2-30 (test Fc), NEMA TS-1 (Section 2.1.12), or approved equivalent. The microwave detector shall be resistant to shock in accordance with IEC 68-2-27 (test EA), NEMA TS-1(Section 2.1.13), or approved equivalent.

4. Functional Characteristics

4.1 Capabilities:

4.1.1 The RVD shall be a true presence detector that can provide presence, volume, and lane occupancy and speed information on up to eight discreet detection zones. This information shall be available to existing controllers via contact closure pairs and to other systems via serial communications lines.

4.2 Transmission:

4.2.1 The microwave radar detector shall transmit on a frequency band of 24.125 GHz +/-100 MHz or another approved spectral band. It shall comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules or the appropriate Spectrum Management Authority. The RVD shall not interfere with any known equipment..

4.2.2 Transmitter power shall not exceed 10 milliwatts.

4.3 Area Coverage:

4.3.1 The RVD's field of view shall cover an area defined by an oval shaped beam and its maximum detection range shall be as follows:

1. Elevation Beam Width: 50°
2. Azimuth Beam Width: 12°
3. Range: 0'-0" to 250'-0"

4.4 Detection Zones:

4.4.1 The number of detection zones defined shall be no less than 12. The range limits of each zone shall be user defined in 1.3 ft resolution.

4.5 Measurement Accuracy:

The detector shall identify vehicle presence within each detection zone with a 95% accuracy or greater, independent of the vehicle's direction of travel through the detection zone during normal traffic flow and when truck traffic is 10% or less. The following error levels shall be achievable, depending on mounting configurations.

4.6 The internal controller shall provide the following capabilities:

Parameter	Sidifired error
Presence	±5%
Volume	±5%
Lane Occupancy	±5%
Average Speed	±10%
Per Vehicle Speed	±10%
Length Classification	±10%
Time event	1.3mS
Input Voltage	±2%

5. Mechanical

The microwave radar detector shall be enclosed in a rugged weatherproof box and sealed to protect the unit from wind up to 100 mph, dust and airborne particles, and exposure to moisture (NEMA type 4X enclosure).

- Max. overall dimensions, including fittings: 21x21x16 cm (8 x 8 x 6 in.)
- Max. RVD assembly weight (without optional communication devices):1.5 kg (3.5 pounds)

The RVD shall allow the incorporation of all necessary power and communications devices i.e. TCP/IP, RF modems, NTCIP converter, High Voltage transformer within its enclosure, requiring no additional cabinet.

The mounting assembly shall consist of coated steel, stainless steel, or aluminium construction, and shall support a load of 20 pounds. The mounting assembly shall incorporate a ball-joint, or other approved mechanism that can be tilted in both axes, then locked into place, to provide the optimum area of coverage.

6. Electrical

The RVD unit shall be operable from either 12 - 24 VAC/DC dissipating no more than 3W (with no communications devices), or optional 95 - 135 VAC @ 60 Hz. Power supply shall be obtained from the power distribution assembly within the controller cabinet, or any convenient power source such as solar or UPS.

SOLAR POWER ASSEMBLY

The MVDS solar power assembly shall be designed to maintain a minimum 14 days of autonomy for the region it is being deployed. It must maintain reliable operation throughout the year in all weather and temperature conditions and a proof of design summary report must be included.

The solar modules shall have a 20 year factory warranty and be UL listed, FM Class I, Div II, Group C&D approved. The array mount shall attach to the side of an approved pole with stainless steel fasteners or other approved. The array mount shall be aluminum alloy or stainless steel. The array shall be capable of withstanding 160 KM (100 MPH) winds.

The solar charge regulator shall be UL listed, minimum 6A with solid state, low voltage disconnect. The solar charge regulator shall be sealed, fully encapsulated in epoxy potting with internal temperature compensation, marine rated terminals, anodized aluminum case and LED indicators. The solar charge regulator shall be FM Class I, Div. II, Groups ABCD and have the CE mark.

The batteries shall be 12V, gel electrolyte (GEL) or absorbed glass matt (AGM), non-spillable, maintenance free units. The quantity of batteries shall be dependent upon the design of the system.

Enclosures shall be .125" aluminum with stainless steel hardware. The enclosures shall have #1 Corbin, Police Lock unless otherwise specified and louvered vents with screens. Powder coating is optional but recommended in hot environments to reduce the inside temperature of the cabinet.

CABLE

Connection between the RVD and the cabinet equipment shall be provided by a single, MS connector terminated cable. The cable shall, as a minimum provide power and RS-232 communications to the unit.

The cable shall be UV-resistant and provide multiple twisted pairs of stranded AWG #20 or #22 wire with a common shield rated at 300V with a temperature rating of 105°C. The cable must

provide sufficient conductors to match the configuration of the RVD, potentially up to eleven pairs.

The MS connector pins must be crimped to the cable conductors and assembled per the manufactures instructions and tested prior to installation and pulling of cable on site.

ELECTRICAL ISOLATION AND SURGE PROTECTION

All power lines, contact closures and serial port shall be isolated. Power lines and serial port shall be surge protected within the unit.

DATA INTERFACE

- Data communications shall be full duplex asynchronous and it shall be configurable as:
 - One opto-isolated RS-485 or RS-232 port at rates from 2400 up to 115200 bits per second.
 - Serial data format shall be standard binary NRZ 8 bits data, 1 stop bit, No parity.
 - RTS/CTS handshake controls
 - Both point-to-point and Multi-dropped configurations are supported
- Optional Bluetooth wireless connection
- An optional presence indication (optional) by up to 8 isolated contact closure wire pairs and up to 16 common-ground contact pairs rated at 350V AC/DC 100 mA for each of the required detection zones.
- A second opto-isolated RS-485 or RS-232 port as above, with an optional NTCIP 1209 protocol support or instead:
 - An optional integral Digital Spread Spectrum (900MHz or 2.4GHz) radio modem with either integral or external antenna
 - An optional Ethernet port (TCP/IP)
 - An optional NTCIP protocol 1209 for TSS.
 - An optional IP Camera capable of providing full motion video over IP with traffic data overlay as well as still picture JPG Email on demand

7. Installation

The RVD shall be mounted in Side-fired configuration on poles or sign structures at the specified locations, using the supplied mounting brackets. The brackets shall be attached with approved 3/4-inch wide, .025-inch thick, stainless steel bands or to a concrete wall/bridge using 2 stainless steel expansion bolts of sufficient length and diameter to support 100 pounds. The contractor shall install the detector unit on a pole at the height recommended by the operation manual above the road surface so that the masking of vehicles is minimized and that all detection zones are contained within the specified elevation angle as suggested by the manufacturer. The RVD mode of operation, detection zones and other calibration and set up parameters will be performed using a MS-Windows-based software and a Notebook PC connected to the RVD through either the main Serial port or an optional IP or Bluetooth connection. The software shall be user friendly, with good visibility outdoors in bright sunny days, allow both manual and automatic lane configuration and verification of correct setup, and diagnostics. It shall include facilities for saving verification data and collected data as well as saving and retrieving sensor setup from disk file.

8. Training

Training shall provide qualified instructors and all materials for training designated personnel in the operation and maintenance of the RVD. Training shall consist of formal classroom lectures and hands-on training. One day shall be provided for a training session. A "day" of training shall consist of 7 hours. The attendance of each session shall be of no more than 6 people

9. Integral Digital Spread Spectrum Radio Modem Specifications

Category	Specification
Technology	Frequency Hopping Spread Spectrum (FHSS) Radio
Frequency band	902-928 MHz or 2.400-2.4835 GHz
Mode	Slave or repeater operation
Hopping pattern	900 MHz: 62 patterns, 2.4 GHz: 44 patterns
Transmitter power	1mW, 10mW, 100mW or 1W selectable
Antenna	Integral whip or external whip/Yagi antenna
Range	Up to 30 km depending on power, antenna and line of sight
Error detection	CRC-16
Encryption	32 bit
Licensing	FCC rules Part 15 and CE approval. License free operation
Temperature range	-37° to +74° C
Added power consumption	Typically adds 1-2W when this option is selected

10. Integral TCP/IP Interface Specifications

Category	Specification
Protocol	TCP, UDP, IP, ARP, ICMP, Telnet, HTTP, HTTPS
Network interface	10/100 Base-T Ethernet (Auto detection)
Configuration	Web based, Telnet or Software Utility
Software	Remote download and configuration possible
Memory	8 MB SDRAM, 4 MB Flash
Temperature range	-37° to +74° C
Added power consumption	Typically adds <1W when this option is selected

Method of Measurement. This item shall be measured Radar Vehicle Detector installed each, tested, operational, and complete

Basis of Payment. This work shall consist of furnishing all labor, materials, equipment, set-up and testing to supply and install a RADAR VEHICLE DETECTOR (RVD) complete in accordance with the contract drawings and these special provisions. Miscellaneous connectors, brackets, cables and serial port cable shall be included in unit price for RVD.

SR02 RADAR VEHICLE DETECTION STATION

Description. This item shall consist of furnishing and installing a Radar Vehicle Detection Station where indicated per these special Provisions and as directed by the Engineer.

Materials. The Contractor shall furnish the following components that can be configured as a Radar Vehicle Detection Station.

- Radar Vehicle Detector
- Frequency Hopping Spread Spectrum Radio
- Solar Panels
- Batteries
- Cabinet/Enclosure to house batteries and electronics
- Internal or External Whip Antenna or Yagi antenna
- All related connection cables

These components shall be compatible with the existing components that were removed and salvaged and upgraded from the Dan Ryan Reconstruction Project, contract #62583.

System Components

Standard Solar Power Assembly

The solar modules shall be made in North America and have a 20-year factory warranty. The solar array shall be a minimum of 85 watts peak. Solar modules shall be UL listed, and FM approved. The array mount shall attach to the side of an approved pole with stainless steel fasteners. The array mount shall be aluminum alloy or stainless steel. The array shall be capable of withstanding 125 mph winds.

The solar charge regulator shall be UL listed, minimum 10A with solid state, low-voltage disconnect. The solar charge regulator shall be sealed with internal temperature compensation, lightning protection, reverse polarity protection and LED indicators. The solar charge regulator shall be FM approved and have the CE mark.

The batteries shall be 12 V gel electrolyte, non-spillable, maintenance free units. Battery autonomy shall be minimum 14 days.

Enclosures shall be .125" aluminum with stainless steel hardware. The enclosures shall have #2 Corbin Lock on an insulated door. There shall be separate compartments for the batteries for the electronics. The minimum enclosure dimensions shall be 43.875" x 16.5" x 10.25".

The enclosure shall have 2 shelves min. with 1.00" x 2.00" opening cutout in the shelf. The lower compartment shall have a 13.00" x 15.00" back panel, .125" thick. The upper and middle compartments shall be vented by louvers on each side. Door shall be equipped with a door stop mechanism to stop the door at 90° and 180°. Cabinet shall have a plastic sheet holder which shall contain the wiring and as-built diagrams specific to the site.

For the solar array power wiring shall be 10-2, stranded copper, double insulated, sunlight resistant, 600 V 90C rated cable.

Minimum Solar Power Requirements to operate in the Chicago area:

- 2-85 watt panels with side of pole mounting
- 1 charge regulator
- 2-120 amp hour batteries AGM Type
- 1-Aluminum Enclosure
- Connection Cables – 10 AWG

Radar Vehicle Detector

Refer to Pay Item SR01 for RVD specifications

DSS Transceivers

DSS Transceiver features:

- Frequency Hopping Spread Spectrum Radio Operating in 900 MHz or 2.4GHz license-exempt ISM bands
- Time Division Multiplex Access (TDMA) operation
- Master, Slave and Repeater modes
- 64 pseudo-random hopping sequences for 900 MHz band, 49 for 2.4GHz band
- Up to 65535 network addresses
- Up to 65535 encryption combinations
- Selectable transmit power: 1, 10, 100 or 1000 mW

Wood Poles

Temporary 27.43 meter high, state stock, wood poles shall be used for detector sites and collection sites. The system components shall be mounted to the wood poles at the locations in this specification or as directed by the Engineer. Wood Poles shall be paid separately as POLE UNIT, WOOD, INSTALL ONLY.

Method of Measurement. RVD VEHICLE DETECTION STATION will be counted as each, regardless of number of RVD Detectors, number of solar panels, batteries, or size of regulator required to provide for a functioning location.

Basis of Payment. This work shall be paid for at the contract unit price each for RVD VEHICLE DETECTION STATION, which shall be payment in full for all material, labor, equipment, tools, and all incidentals necessary for the completion of this work describe herein and elsewhere in the contract documents.

SR03 RADAR VEHICLE DETECTION HUB

Description. This item shall consist of furnishing and installing a Radar Vehicle Detection Hub where indicated in these special provisions and as directed by the Engineer.

Materials. The Contractor shall furnish the following components that can be configured as a Radar Vehicle Detection Hub. These components shall be compatible with the existing components that were removed and salvaged, and upgraded from the Dan Ryan Reconstruction Project, contract #62583.

The Radar Vehicle Detection Hub sites shall include but not be limited to the following hardware:

- Wood Pole
- Master Radio Controller
- Salvaged or state stock cabinets
- Antennas
- Telemetry Racks w/Power supplies (Provided by Department)
- All related connection cables
- 120V AC and Telephone Connections
- GSC Rigid conduit from service to cabinet

ENVIRONMENTAL CONDITIONS AND PROTECTION

Except as stated otherwise herein, the equipment shall meet all its specified requirements during and after subjecting to any combination of the following:

- Ambient temperature range of -37 to +74 degrees C
- Relative humidity from 5 to 95%, non-condensing
- Power surge of ± 1 kV surge (rise time = 1.2 μ sec, hold = 50 μ sec) applied in differential mode to all lines, power and output, as defined by IEC 1000-4-5 and EN 61000-4-5 standards.

The design shall be inherently temperature compensated to prevent abnormal operation. The circuit design shall include such compensation as is necessary to overcome adverse effects due to temperature in the specified environmental range.

All equipment and component parts furnished shall be new, be of the latest design and manufacture, and be in an operable condition at the time of delivery and installation. All parts shall be of high quality workmanship, and no part or attachment shall be substituted or applied contrary to the manufacturer's recommendations and standard practices.

The design shall be such as to prevent reversed assembly or improper installation of connectors, fasteners, etc. Each item of equipment shall be designed to protect personnel from exposure to high voltage during equipment operation, adjustments and maintenance.

Except as may be otherwise stated herein for a particular item, no item, component, or subassembly shall emit a noise level exceeding the peak level of 55 dBA when measured at a distance of one meter away from its surface.

WIRELESS DATA TRANSFER SYSTEM

This document describes the function of a system comprised of multiple Radar Vehicle Detectors (RVD) equipped with RF transceivers capable of communicating with a single central RF unit at a Traffic Controller. The system will provide wireless transfer of vehicle detection's from the RVD to the Traffic Controller and interface via contact closure.

Prior to installing RVD Detector Stations or RVD Detection Hubs, the Contractor shall provide the Department a Radio Site Survey of the I-55 Expressway segment to determine the optimum radio band to operate the Wireless Transfer System. The Radio Site Survey will also determine the feasibility of the Suggested RVD Detector Stations and RVD Detection Hubs listed in this specification. It shall be the Contractor's responsibility to verify each location's viability and make any alternate site recommendations to the Department, should the viability of a particular site be in question. The final locations shall be picked based on the Radio Site Survey. The cost of the Radio Site Survey shall be included in the cost of the Radar Vehicle Detection Hub Pay Items.

WIRELESS DATA CONFIGURATION

The wireless data network shall be a multipoint to point data network meeting the following requirements:

Master Radio Controller @ Data Collection Sites:

The wireless system for concentration of vehicle detection events from several RVD sensors equipped with Digital Spread Spectrum (DSS) modems into a single Master Radio Controller unit.

The Master Radio Controller's DSS modem employs Time Division Multiplex Access (TDMA) protocol to communicate with a number of RVD sensors slave modems. Each RVD slave transmits a data packet during its assigned time slot every 0.5 seconds. Transmitted data carries information on vehicle presence in all its detection zones with a 10mS resolution.

The user assigns one of the Master Controller's 32 dry relay contacts to each detection zone of all RVD sensors in the system. The Master controller reconstructs vehicle presence from the received data and converts it to closures of the corresponding contacts.

The system should come pre-configured as "plug and play". Operating Features:

Controller

The controller of the wireless system shall provide the following:

- Built-in DSS Transceiver configured as Master
- SIZE 135 x 135 x 50 mm (5.25 x 5.25 x 2 in), WEIGHT 500g (1.1lb)

- INPUT (wireless data) Contact closure data from up to 32 detection zones of up to 8 Multi-zone Vehicle Detectors.
- OUTPUT (37-pin D-type connector) 32 dry relay contacts shall be rated at 80V, 50mA, 600mW maximum isolation-1500VAC
- Accuracy of contact closure reconstruction-to10ms
- Delay – up to 1 sec
- POWER The controller shall be powered by 9-24V AC or DC
- Setup and diagnostic software providing:
 - Display of system in operation
 - Assignment to sensors detection zones to Output contacts
 - DSS Network parameter setup
 - Hardware diagnostic tests
 - Monitoring of link quality
 - Access to sensors for diagnostic purposes
 - Logging of activity and diagnostics
 - Frequency spectrum display to help in hop sequence selection
 - DSS Master shall be shelf mounted and ordered with its own power supply

Radar Vehicle Detection Hub communicates to a maximum of four Radar Vehicle Detection Stations using point-to-point, spread spectrum radios. The Contractor shall assign the radios to specific channels based on:

- The assessment of propagation and noise measurements during the initial site assessment
- Mitigation of interference between links

Installation:

The Contractor shall install the cabinets, detectors, and transceivers at the Stations and Hubs approved by the Engineer. The Contractor shall interface the transceivers to the radar detectors at the Stations and the transceivers to the Tone Telemetry equipment at the Hubs.

If required, the Contractor shall provide additional phone circuits and relocate additional tone equipment to the Hub. The additional phone circuits are paid for under a separate pay item. The tone equipment will be relocated from other cabinets under REMOVE AND SALVAGE EXISTING TSC EQUIPMENT.

The Contractor maps one of the Hub's eight dry contacts to each detection zone of the RADAR VEHICLE DETECTOR sensors in the system. At the TSC, the Contractor shall cross-connect the incoming closures to the nearest incoming ATMS FEP detector input. (All of the existing detector equipment is cross-connected to the IDF in the Intermediate Distribution Frame (IDF).

When all equipment is installed and connected, the Contractor shall test and demonstrate the performance and accuracy of the installed detectors. This test shall match observed and detected vehicles, as well as the ability of the Advance Traffic Management System to collect and use the data for travel times. The accuracy of the travel times is not an issue for the Contractor, provided the detectors are reporting the vehicles' presence correctly.

Wood Poles:

Temporary 27.43 meter high, state stock, wood poles shall be used for detector sites and collection sites. The system components shall be mounted to the wood poles at the locations in this specification or as directed by the Engineer. Wood Poles shall be paid separately as POLE UNIT, WOOD, INSTALL ONLY.

Method of Measurement. Radar Vehicle Detection Hub shall be measured per each detection Hub installed.

Basis of Payment. The following items shall be paid for each RADAR VEHICLE DETECTION HUB, which price shall include all materials, equipment, and labor needed to perform the work described herein.

SR04 RVD STATION, UPGRADE AND INSTALL
SR05 RVD HUB, UPGRADE AND INSTALL

Description. This item shall consist of retrieving from the Owners storage facility, loading, upgrading, and installing a wireless Surveillance Vehicle Detection System. This system shall consist of the following elements: Salvaged Radar Vehicle Detection Station (RVD Station); salvaged Radar Detection Hub (RVD Hub) relocated from Dan Ryan Temporary Detection System, Contract 62583 and I-80 Contract 62664.

The wireless vehicle detection system will emulate the typical 6' diameter induction loops. The system will use a hub, located at the site where AC power and phone service are available. This hub will use spread spectrum radios to communicate upstream and downstream with radar vehicle detectors at radar vehicle detector stations. The radar detectors will be configured to emulate the loop detectors and provide dry contact switch closures through the radios to the hub. At the hub, the switch closures will be connected to tone transmitters on a telephone circuit to the Traffic Systems Center (TSC).

The new Radar Detector Stations and relocated Radar Vehicle Detection Stations, however, maybe isolated from the system and will not have access to normal power service. These installations will use solar power for the radar detectors and radios.

All work will require close coordination with the TSC staff and the Engineer.

Materials. The Contractor shall remove, salvage and reinstall the following components and subsystems that can be configured as Radar Vehicle Detection Hubs and Radar Vehicle Detection Stations:

Salvaged components from Contract 62583 and 62664 that comprise a Radar Vehicle Detection Station are:

- Solar Panel
- Solar Charge Regulator
- Batteries, 12v, gel-electrolyte
- Battery enclosure
- Radar Vehicle Detector w/integrated DSS Radio (900 MHz)
- RVD Bracket
- RVD Cables
- Wood Pole
- Yagi Antenna

Salvaged components from Contract 62583 and 62664 that comprise a Radar Vehicle Detection Hub are:

- Wood Pole
- 900 MHz Spread Spectrum Radio
- Yagi Antenna
- All related connection cables, brackets, and other incidental items
- TSC telemetry cabinet w/tone rack enclosure

The Contractor shall return the RVD detectors and RVD Hub radio/contact closure equipment to the original equipment manufacture to be upgraded to the latest RVD and RVD hub radio/contact closure equipment for reinstallation at locations as directed by the Engineer. The cost to upgrade the salvaged equipment shall be included in the contract unit price for this item.

The contractor shall supply and install a TS1 or TS2 detector rack at the salvage RVD hub to accept the upgraded radio/contact closure equipment. The existing equipment is shelf mounted and the upgraded equipment will be rack mounted. The cost of the detector rack shall be included in the cost for the item.

The Contractor shall install the detector unit on the pole at the nominal height of 21 feet above the road surface so that the masking of vehicles is minimized and that all detection zones are contained within the

specified elevation angle as suggested by the manufacturer. The radar vehicle detector's detection zones shall be set up using the provided licensed software and the Contractor's Notebook PC.

Each Detector Hub communicates to a maximum of four Temporary Detection Stations using point-to-point, spread spectrum radios. The Contractor shall assign the radios to specific channels based on:

- The assessment of propagation and noise measurements during the initial site assessment
- Mitigation of interference between links

The Contractor shall install the cabinets, detectors, and transceivers at the Stations and Hubs approved by the Engineer. The Contractor shall interface the transceivers to the radar detectors at the Stations and the transceivers to the Tone Telemetry equipment at the Hubs.

If required, the Contractor shall provide additional phone circuits and relocate additional tone equipment to the Hub. The additional phone circuits are paid for under a separate pay item. The tone equipment will be relocated from other cabinets under REMOVE AND SALVAGE EXISTING TSC EQUIPMENT.

The Contractor maps one of the Hub's eight dry contacts to each detection zone of the RADAR VEHICLE DETECTOR sensors in the system. At the TSC, the Contractor shall cross-connect the incoming closures to the nearest incoming ATMS FEP detector input. (All of the existing detector equipment is cross-connected to the IDF in the Intermediate Distribution Frame (IDF).

The Contractor shall replace all the 12v, gel-electrolyte batteries, antenna cables, and solar panel harnesses before reinstallation at the locations as directed by the Engineer. The cost to replace the batteries, antenna cables, and harnesses shall be included in the cost of the item.

When all equipment is installed and connected, the Contractor shall test and demonstrate the performance and accuracy of the installed detectors. This test shall match observed and detected vehicles, as well as the ability of the Advance Traffic Management System to collect and use the data for travel times. The accuracy of the travel times is not an issue for the Contractor, provided the detectors are reporting the vehicles' presence correctly.

The original equipment manufacturer for the radar detectors and associated solar equipment and wireless transmission system is Image Sensing Systems formally EIS.

Method of Measurement. RVD STATION, Upgrade and Install, and RVD HUB, Upgrade and install shall be measured per each detection station installation, station and hub installation.

BASIS OF PAYMENT. The following items shall be paid for at the contract unit price each RVD STATION, upgrade and install, and RVD HUB, upgrade and install, which price shall include all materials, equipment, and labor needed to perform work described herein.

SR06 RVD HUB/RVD STATION RADIO SITE SURVEY

Description. The Contractor shall provide the Department a Radio Site Survey of the identified corridors in SR04 and SR05 or as specified by the Engineer, to determine the optimum radio band to operate the wireless transfer system. The Radio Site Survey will also determine the feasibility of the suggested RVD Hubs and RVD Stations as shown in the plans or as directed by the Engineer. It shall be the Contractor's responsibility to verify each location's viability and make any alternate site recommendations to the Department, should the viability of a particular site be in question. The final location shall be based on the Radio Site Survey. A representative of the detector manufacturer shall be on site to conduct the tests and submit a detailed map of the area with the proper setback, mounting height, remote signal and host signal strength along with alternate site recommendations to the Engineer.

Basis of Payment. This work shall be paid for at the contract unit price lump sum for RVD HUB/RVD STATION RADIO SITE SURVEY which shall be payment in full for all material, labor, equipment, tools, and all incidentals necessary to complete this work described herein and elsewhere in the contract documents.

SS01 8" LED SIGNAL HEAD, 1 FACE

Description. This items shall conform with Section 880 of the Standard Specifications for Road and Bridge Construction and Vehicle Traffic Control Signal Heads- Light Emitting Diode (LED) Circular Signal Supplement June27, 2005 and except as revised herein. All traffic signal sections shall have eight (8) inch modules unless otherwise stated on the plans or directed by the signal engineer. Existing signal head(s) at locations where a new signal head, face(s) or section(s) are installed, the removal of an existing signal head, face(s) or section(s) shall be incidental to this item. Mounting hardware will not be paid separately but shall be included in the cost of this item. The basis of payment is each for furnishing and installing the signal section head complete.

Basis of Payment. This work shall be paid at the contract unit price each for 8" LED Signal Head, 1 Face as described above, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SS03 SIGNALING LOAD RELAY, MECHANICAL

Description. This item shall consist of furnishing and installing a signal load relay, mechanical state, in a surveillance cabinet.

This item shall consist of furnishing and installing a Signal Load Relay-Mechanical type mated with Cinch series 2400 socket.

The load relay shall be able to switch 20 amperes for industrial use in multiple configuration and 30 amperes in multi-pole configuration at 120 VAC or 240 VAC, in a dust covered Jones plug. Relay shall be double pole, double throw.

The load relay shall have a mechanical life in excess of 5 million operations and shall be a Midtex type 136 or equal.

Ramp metering cabinet shall have a signal load relay installed. The signal load relay shall consist of two components, a base which is mounted on the E.S.P. Type 3 cabinet wall and a signal load relay which plugs into and is secured to the base by a locking screw. The coil of this relay shall be connected to the mark output of the signal change tone receiver. The one set of contacts of the load relay shall be used to change the ramp signals and one set of contacts shall be used to key the mark input to the signal change transmitter.

Basis of Payment. This work shall be paid at the contract unit price each for SIGNALING LOAD RELAY, MECHANICAL, which price shall be payment in full for all work as described herein and as directed by the Engineer.

SSU1 SURGE PROTECTORS, AC FILTERING

Description. This item shall consist of furnishing and installing AC power line noise surge, transient and RFI filter suppresser in an existing Traffic Systems Center cabinet as directed in writing by the Engineer.

The Contractor shall furnish and install in an existing Traffic Systems Center cabinet and EDCO SURRESTOR ACP-340 filtering surge and power line noise protector. The Contractor shall remove the old AC line filter and RFI filter before installing a new Surrestor. He shall do all the necessary drilling and tapping to proper mount the Surrestor. Miscellaneous hardware, mounting and wiring shall not be paid separately but shall be considered as incidental to the cost of this item.

Basis of Payment. This work shall be paid at the contract unit price each for SURGE PROTECTORS, AC FILTERING, which price shall be payment in full for all work as described herein and as directed by the Engineer.

ST01 TELCO SUPPRESSION

Description. This item shall consist of furnishing and installing a 66 block, silicon avalanche diode technology, transient voltage surge suppression on Telco T-1 and E-1 data lines at Communication Cross Connects, Comm Huts, or at Traffic Systems Center.

The transient voltage surge suppression shall employ silicon avalanche diode (SAD) technology which is non degrading, fast clamping, clip on with a single bus to ground to allow multiple modules to be placed in series for a quick installation.

Max operating voltage	17Vpk
Clamping voltage	20Vpk
Max operating frequency	20Mhz
Peak pulse power dissipation	15joules

Response time	<5nsec
Protection mode	Tip to Ring Tip to Ground Ground to Tip

Basis of Payment. This work shall be paid for at the contract unit price each, for TELCO SUPPRESSION, which shall be payment in full for all work described herein and as directed by the Engineer.

ST02 TELECOMMUNICATION CABLE INLINE CONNECTORS AND TERMINATION

Description. This item shall consist of furnishing and installing U1B inline connectors and U1Y bridging inline connectors in a junction box type "J" in the expressway median barrier wall as directed, in writing, by the Engineer.

Installation. There is an existing 100C-No. 19 telecommunication cable in the expressway median barrier wall. This cable is "spliced" in junction box type "J" at each surveillance installation and every 1500 feet in the barrier wall. In the junction box type "J" the Contractor shall remove the existing S66 telephone type terminal blocks and the Plate bracket. The Contractor shall re-terminate the 100C-No. 19 cable the installation incoming 6C-No. 19 cable with Scotchlok Brand U1B inline, sealed, moisture resistant four wire (1 full pair) connector for solid copper (16-19 AWG) cable. The 100 C-No. 19 cable shall be joined bundle for bundle, cable pair or cable pair in the junction box type "J" with the U1B and U1Y connectors. A special crimping tool shall be required for installing the Scotchlok inline connectors. All cabling shall be tied and placed in the "J" box in a neat workmanlike manner. The Contractor shall clean the interior of the "J" box ensuring it is free of debris, water and any corrosion. The Contractor shall ensure that the shielding of both incoming cables are properly bonded together with 10 AWG wire and stainless steel clamps. Contractor shall be responsible for the cost of any and all expressway lane and/or shoulder closures required to complete the work in the median barrier wall. Miscellaneous hardware shall not be paid separately but considered as incidental to the cost of this item.

Basis of Payment. This work shall be paid at the contract unit price each, TELECOMMUNICATION CABLE INLINE CONNECTORS AND TERMINATION, which payment will be paid in full for all the work described herein.

ST03 TELECOMMUNICATION CABLE - NO. 19/3 PAIR

Description. This item shall consist of furnishing and installing telephone cable intended for direct burial in P-duct or G.S. conduit. The number of conductors shall be twisted into pairs stranded into a cable core and enclosed in two polyethylene jackets, with a copper shield between the inner and outer jackets.

All No. 19 electric cable shall conform with these specifications and the current addition of the Rural Electrification Specification for fully color-coded, polyethylene or crystalline propylene/ethylene copolymer-insulated, double polyethylene copolymer-insulated, double polyethylene-jacketed telephone cables for direct burial PE 54. The No. 19 cables shall be installed in complete spans.

Material and Testing. No. 19 electric cable shall meet the requirement set forth in the REA Specification PE 54.

Conductors. Each conductor shall be a solid round wire of commercially pure annealed copper. Conductors shall meet the requirements of ASTM Designation B-3, latest issue, except that the requirements for dimensions and permissible variations are waived.

Conductor Insulation. Each conductor shall be insulated with colored insulating grade high density polyethylene or crystalline propylene/ethylene copolymer. The manufacturer shall have the option of using either of the above materials.

Identification of Pairs. The polyethylene or propylene copolymer compounds used for conductor insulation shall be colored so as to identify (1) the "tip" and "ring" conductor of each pair, and (2) each pair in the completed cable.

Standards of Color. The colors of insulated conductors supplied in accordance with this specification shall fall within the limits of standards of color as defined by the Munsell Color Notations specified in paragraph 4.031.

Twisting of Pairs. The insulated conductors shall be twisted into pairs.

In order to provide sufficiently high crosstalk losses at voice and carrier frequencies, the pair twists shall be designed to enable the cable to meet the pair-to-pair capacitance unbalance requirements and the crosstalk requirements.

Core Covering. The core shall consist of an inner jacket of polyethylene applied over the completed core, a metal shield, and an outer jacket of polyethylene.

Shield. A gopher-resistant corrugated shield of fully annealed copper shall be applied longitudinally over the inner jacket. The shield shall completely cover the inner jacket and shall be so constructed that the completed cable shall meet the bending requirements given in paragraph 9 of Rural Electrification Specification PE-54. The shield shall provide 100% electrical shielding plus resistance to gopher attack or other severe service conditions.

Mutual Capacitance. The average mutual capacitance of all pairs in any reel shall be in accordance with the following table:

<u>Number of Cable Pairs</u>	<u>Average Mutual Capacitance mf/mile (mf/km)</u>
3	0.083 plus or minus 0.010 (0.052 plus or minus 0.006)
6, 12	0.083 plus or minus 0.007 (0.052 plus or minus 0.004)
18 or more	0.083 plus or minus 0.004 (0.052 plus or minus 0.002)

Mutual capacitance is the effective capacitance between the two wires of a pair.

Capacitance Unbalance: (Pair to Pair): Pair-to-pair capacitance unbalances as measured on the completed cable at a frequency of 1000 plus or minus 100 Hz shall not exceed the following values:

<u>Number of Cable Pairs</u>	<u>Pair-to-Pair Capacitance Unbalance (Max) mmf/kf (mmf/km) Max. Individual</u>
Less than 12	100 (181.1)

Capacitance Unbalance - (Crosstalk Loss): The r.m.s. output-to-output far-end crosstalk loss as measured on the completed cable at a frequency of 150 kHz shall be not less than 73 db per 1,000 feet (67.8 db per kilometer) for cable sizes of 6 pairs and larger. The r.m.s. calculation shall be based on the combined total of all adjacent and alternate pair combinations within the same layer and center to first layer pair combinations.

Capacitance Unbalance - (Pair to Shield): Pair-to-shield direct capacitance unbalances as measured on the completed cable at a frequency of 1000 plus or minus 100 Hz shall not exceed the following values:

<u>Number of Cable Pairs</u>	<u>Pair-to-Shield Capacitance Unbalance (Max) mmf/kf (mmf/km) Max. Individual</u>
----------------------------------	---

Less than 12 250 (820)

Conductor Resistance. The DC. resistance of any conductor as measured on the completed cable shall not exceed the following values when measured at or corrected to 20° C.

<u>AWG</u>	<u>Maximum Resistance ohms/kf (ohms/km)</u>
19	8.7 (28.5)

Basis of Payment. This work will be paid for at the contract price per lineal foot for TELECOMMUNICATION CABLE - NO. 19/3 PAIR of the number of conductors specified, which price or prices shall be payment in full for furnishing all materials, making all electrical connection and installing the cable in place.

ST04 TELECOMMUNICATION CABLE- NO. 19/25 PAIR

Description. It is the intent of this specification that a continuous communication cable be installed on the Expressway and be connected to the Traffic Systems Center. All surveillance installations along the Expressway will be connected to this cable which shall be connected to the Traffic Systems Center building approximately East Avenue and the Eisenhower Expressway. This item shall consist of furnishing and installing a 25 pair No. 19 gauge wire, telephone type cable, with all necessary connection blocks, binding posts, connections and all necessary miscellaneous hardware. The 25 pair No. 19 cable shall conform with these specifications and the current edition of The Rural Electrification Specification (REA) PE-39.

Material & Construction. The #19 telecommunication cable shall meet the requirements set forth in the REA Specification PE-39. Shielding shall be fully annealed solid copper. Shielding between cables shall be bonded together by a #10 AWG copper wire and stainless steel clamps.

Testing. Once the telecommunications cable is installed the Contractor in the presence of the TSC Engineer shall test the cable. The type of test performed shall be an end to end test with Halcyon type equipment transmitting and receiving at each end of the cable. Each pair shall be tested and the results shall be recorded and submitted to the Engineer. If any results don't fall within the requirements set forth in (REA) PE-39, the Contractor shall correct and re-test that cable pair. Traffic Systems will tolerate only one pair out of every 100 pair of cable that doesn't meet or exceed specifications set forth in (REA) PE-39.

Installation Details. The telecommunication cable shall be installed in the median barrier wall where a 4-inch P.V.C. duct shall be provided for its installation. The Contractor shall insure that the telecommunication duct is continuous, free of debris and not connected to the electrical lighting cable duct.

"Junction boxes" or cross connect terminals shall be installed in or at the median barrier wall at every Surveillance installation, as shown on the plans, and every 1500 feet. The cable shall be continuous between runs. No splices will be allowed in the cable. Should it not be possible to run the cable continuous between surveillance installation, the interconnection of the cable will be allowed in the "junction box" with U1B/U1Y connectors or equal. These "splices" shall be held to a minimum and maximum cable lengths shall be used to reduce the number connections.

The cables shall be terminated in a Surveillance installation cabinet as shown on the plan. The cables shall be connected on a type 66 connector block which shall be mounted in the cabinet. The Surveillance installation shall be connected to the appropriate cable pair on the 66 blocks with a 6C-No. 19 cable. Two (2) type 66 connecting blocks shall be required per 50 pair cable installation; four (4) type 66 connecting blocks shall be required per 100 pair cable installation.

The type 66 quick connect terminal blocks shall be furnished with tin lead plated clips manufactured to Western Electric Specification #669A. There shall be eight spring clips, which are electrically and mechanically common to each other, to a row and 25 rows of spring clips. The type 66 connecting block shall be 13-5/16 x 3-3/8 x 1-1/8. The block shall be molded of self extinguishing material and shall have molded in fanning strips on each side which shall be marked every five rows. The top

of the block shall be lettered by rows (A-B-C etc.) and the retaining plate shall be numbered every other row and lettered on the top to correspond to the face of the block. The Contractor shall insure that none of the spring clip rows are shorted together or shorted to the junction box or cabinet. The Contractor shall supply the type 66 block with high impact PVC, transparent snap on protective covers. The Contractor shall spray the spring clips with a protective coating after all wires are terminated. A punch down impact tool will be required to make the connection to the type 66 block. The punch down, impact tool shall be equal to or exceed the Harris Dracon DELUX Automatic Impact Tool D814 for Type 66 blocks only.

When installing the tele-communication cable, the Contractor shall extend his installation and connection of the cable to the next adjacent surveillance installation or "junction box" beyond the limits of his contract section. He shall be responsible for insuring that the cable is continuous and connected from one contract section to the other.

Basis of Payment. This work shall be paid at the contract price per lineal foot for TELECOMMUNICATIONS CABLE - NO. 19/25 PAIR which price shall be payment in full for furnishing all materials, making all electrical connections and installing the cable complete in place.

Connecting blocks, terminal blocks, wiring, mounting brackets, U1B/U1Y connectors, and miscellaneous hardware will not be paid separately, but shall be considered as incidental to the cost of this item.

ST05 TELECOMMUNICATION CABLE, INSTALL ONLY

Description. This item shall consist of retrieving from the State's storage facility, installing and testing telecommunication cable of the type and size specified. There are several sizes of cable at the State's storage facility: 25 pair, 50 pair, and 100 pair No. 19.

Material and Construction. The #19 telecommunication cable shall meet the requirements set forth in the REA Specification PE-39. Shielding shall be fully annealed and solid copper. Shielding between cables shall be bonded together by a #10 AWG copper wire and stainless steel clamps.

Testing. Once the telecommunications cable is installed, the Contractor (in the presence of the TSC Engineer) shall test the cable. The type of test performed shall be an end to end test with Halcyon type of equipment transmitting and receiving at each end of the cable. Each pair shall be tested and the results shall be recorded and submitted to the Engineer. If any results don't fall within the requirement set forth in (REA) PE-39, the Contractor shall correct and re-test that cable pair.

Installation Details. The telecommunication cable shall be installed in the median barrier wall where a 4-inch P.V.C. duct shall be provided for its installation. The Contractor shall insure that the telecommunication duct is continuous, free of debris and not connected to the electrical lighting cable duct.

"Junction boxes" or cross connect terminals shall be installed in or at the median barrier wall at every surveillance installation, as shown on the plans, and every 1500 feet. The cable shall be continuous between runs. No splices will be allowed in the cable. Should it not be possible to run the cable continuous between surveillance installations, the interconnection of the cable will be allowed in the "junction box" with U1B/U1Y connectors or equal. These "splices" shall be held to a minimum and maximum cable lengths shall be used to reduce the number of connections.

The cables shall be terminated in a surveillance installation cabinet as shown on the plan. The cables shall be connected on a type 66 connector block which shall be mounted in the cabinet. The surveillance

installation shall be connected to the appropriate cable pair on the 66 blocks with a 6C-No. 19 cable. Two (2) type 66 connecting blocks shall be required per 50 cable installation.

The type 66 quick connect terminal blocks shall be furnished with tin lead plated clips manufactured to Western Electric Specification #669A. There shall be eight spring clips, which are electrically and mechanically common to each other, to a row and 50 rows of spring clips. The type 66 connecting block shall be 13-5/16 x 3-3/8 x 1-1/8. The block shall be molded of self extinguishing material and shall have molded in fanning strips on each side which shall be marked every five rows. The top of the block shall be lettered by rows (A-B-C) etc. and the retaining plate shall be numbered every other row and lettered on the top to correspond to the face of the block. The Contractor shall insure that one of the spring clip rows are shorted together or shorted to the junction box of cabinet. The Contractor shall supply the type 66 block with high impact PVC, transparent snap-on protective covers. The Contractor shall spray the spring clips with a protective coating after all wires are terminated. A punch down impact tool will be required to make the connection to the type 66 block. The punch down, impact tool shall be equal to or exceed the Harris Dracon DELUX Automatic Impact Tool D814 for type 66 blocks only.

When installing the telecommunication cable, the Contractor shall extend his installation and connection of the cable to the next adjacent surveillance installation or "junction box" beyond the limits of his contract section. He shall be responsible for insuring that the cable is continuous and connected from one contract section to the other.

Basis of Payment. This work shall be paid at the contract price per lineal foot for Telecommunications Cable, Install Only which price shall be payment in full for furnishing all materials, making all electrical connections and installing the cable complete in place.

Connecting blocks, terminal blocks, wiring mounting brackets, U1B/U1Y connectors, and miscellaneous hardware will not be paid separately, but shall be considered as incidental to the cost of this item.

STN1 TONE POWER SUPPLY

Description. Under this item, for a unit price each as shown in the schedule of prices, and when directed by the Engineer in writing, the Contractor shall furnish a power supply (QEI Model P 21 or equivalent) in strict accordance with supplement and specified herein.

The power supply shall operate on input voltage of 117 VAC allowing for 10% variation in line voltage.

The power supply shall provide a regulated 12 VDC output at 1.7 amps.

Each tone equipment mounting frame field located or office located, shall have its own regulated power supply, capable of operating at least ten tone modules in any combination of transmitters and receivers.

The power supply shall have floating type gold plated connection to insure good connection.

The front panel of the power supply shall have an on/off switch and a yellow LED that indicates the status of the output DC voltage.

The power supply shall contain a switch and L.E.D. on the front panel to permit the monitoring of the supply voltage with the existing Traffic Systems Center tone test meter.

The power supply shall be fused.

The power supply shall have a DC voltage control.

Basis of Payment. This work shall be paid at the contract unit price each for furnishing a Power Supply (QEI Model QP21 or equivalent), TONE POWER SUPPLY, which price shall be payment in full for all work as described herein and as directed by the Engineer.

STN2 TONE RACK CRADLE ASSEMBLY FOR FIELD

Description. This work consists of furnishing and installing a field tone rack cradle assembly per typical TY-1 TSC-400#6 and #7 at a location designated by the Engineer.

Basis of Payment. This work shall be paid at the contract unit price each for FIELD TONE RACK CRADLE ASSEMBLY FOR FIELD, which shall be payment in full for all work as described herein and as directed by the Engineer.

STN3 TONE RECEIVER, F.S.K.

Description. Under this item, for a unit price each as shown in the schedule of prices, and when directed by the Engineer in writing, the Contractor shall furnish and install FSK tone receiver (QEI Model TSC445R or equivalent).

The requirements as to the programmable channel frequency range, channel spacing, holding of shifted frequency and operating voltage shall be the same as those for 3 Frequency Transmitter.

Input sensitivity of tone receiver shall be adjustable down to -45 dbm. The dynamic range shall be 25 db.

Adjacent channel attenuation shall be at least 35 db.

Each receiver shall be capable of test operation of at least 30 pulses per second.

Each receiver shall have one single pole, double throw, mark relay output and single pole, double throw space output relay.

Each receiver shall also have carrier detector circuit with one single pole double throw relay output.

All output relays contacts shall be capable of handling a minimum of 30 VA continuously. Any substitution shall be subject to written approval of the Engineer.

Receiver shall have L.E.D. indicators for Mark-Red, Space-Yellow and Carrier Green, visible through the face panel.

The receiver shall have a floating type gold plated connector to insure good connection.

Receiver shall operate in a space hold, 2 state operation.

An attenuation plug shall be provided to set sensitivity level of receiver.

Each receiver shall come with 2 spare relays as above.

Test points through front face plate shall be provided to test for DC voltage levels.

Basis of Payment. Under this item, for a unit price each as shown in the schedule of prices, and when directed by the Engineer in writing, the Contractor shall furnish and install an FSK TONE RECEIVER (QEI Model TSC445R or equivalent).

STN4 TONE TRANSMITTER, F.S.K.

Description. Under this item, for a unit price each as shown in the schedule of prices, and when directed by the Engineer in writing, the Contractor shall furnish and install an F.S.K. tone transmitter (Regular)(QEI Model TSC 445T or equivalent) in strict accordance specified herein.

Telemetry equipment shall be furnished and installed in the Traffic Systems Center office and along expressway at locations designated in these Special Provisions and in strict accordance with these specifications.

Communication line from field located cabinets to the Traffic Systems Center Office will be via 3002 Channel, C1 conditioning, Type 7FDDC telephone pairs leased by the Traffic Systems Center, or telecommunication cable in the barrier wall.

All tone transmitters and tone receivers shall be three frequency frequency-shift; that is equipment which the center frequency is normally on at all times and electrically shifted +30 Hz to a higher frequency (mark) or -30 Hz to a lower frequency (space). Other frequency shifts from +10 to +300 shall be user selectable.

All transmitters, receivers and power supplies shall be of the modular plug in type construction. The circuitry of each unit shall be protected U-shaped metal chassis, cadmium plated with irradiate finish.

All tone equipment shall be physically interchangeable with existing Traffic Systems Center tone equipment, that is furnished tone equipment shall be directly compatible with and replaceable by existing tone equipment with no modification to any hardware.

All transmitters, receivers and power supplies shall be solid state. All transistors shall be silicon, excepting the power transistors in power supplies. All transmitters and receivers IC's shall be plug in.

All transmitters and receivers shall be programmable frequency-shift key units. These FDM units shall have a universal card which is field programmable for any channel frequency or shift. The frequencies available shall be in the range of 120 HZ to 5235 Hz in increments of 5 Hz. The shifts available shall be 10, 25, 30, 35, 42.5, 60, 70, 75, 120, 150, 240, and 300 Hz. A new center frequency or shift shall be field programmed by simply changing setting of the program switch or plug-in jumpers.

All transmitters and receivers shall be capable of being operated at any frequency shall be clearly visible through or on the front of each transmitter and receiver. Such indication will always correspond to the frequency of the elements currently operating in each module. Contractor shall supply 500 complete sets of pre-printed tags for labeling the units indicating the center frequency.

Transmitters and receivers shall work into a communication link with standard impedance of 600 ohms.

Transmitters and receivers shall be individually fused.

Mechanical and Environmental Requirements:

Field Units:

Receivers, transmitters and power supplies shall be capable of operation in field cabinets which provide protection against direct contact with the elements with no special provisions for environmental; control.

All field located tone equipment shall be mounted in the traffic control cabinets as designated elsewhere in these specifications.

All field located tone equipment shall be capable of operation on a temperature range of -30 degrees to +60 degrees Celsius and shall have P.C. boards coated for protection against humidity in the range of 0% to 96%.

All field tone equipment shall be capable of being tipped, while in operation, from the vertical to the horizontal position and back again, without having adverse effect on the continuous operation of the transmitter, receiver or power supply.

Basis of Payment. This work shall be paid at the contract unit price each for TONE TRANSMITTER, F.S.K., which price shall be payment in full for all work as described herein and as directed by the Engineer.

SU01 UPS SYSTEM, INSPECTION

Description. The Contractor shall furnish a factory sales and service company to complete an annual comprehensive UPS inspection as specified herein at the Traffic Systems Center.

Location. This work shall apply to the monitoring UPS system located at 445 W. Harrison St., Oak Park, IL 60304

Work Description. Eaton Power Ware Model #9390-100 Serial # EC515CBB07 with 80 batteries.

The inspection shall consist of but not be limited to the following items, which are described below:

- (A) Initial checks - System energized and carrying a customer's load.
 - 1. Verify initial, as found, voltage and current on the following:
 - a) Rectifier input
 - b) Rectifier output
 - c) Inverter output
 - d) Alternate line

- (B) System in bypass and de-energized - Customer's load on alternate line.
 - 1. Verify the following:
 - a) Bolted, screw and crimp connections for tightness
 - b) Relays, seated properly
 - c) Wiring, for electrical and physical damage
 - d) Capacitors, for bulging and/or leaking
 - e) Proper alignment of all sliding P.C. Boards
 - f) Plugs, for proper electrical and physical connection
 - g) P.C. Boards, for over-temperaturing
 - h) Vacuum system (if customer has vacuum available)

- (C) System in bypass and energized - Customer's load on alternate line.
 - 1. Verify the following:
 - a) All alarms and indicators for proper function and operation
 - b) Measure and adjust all critical logic settings
 - c) Battery Plant:
 - 1) measure Volts per cell
 - 2) visual inspection for leaks or bad cells
 - 3) spot check for connection torques
 - 4) Visual inspection of interior and intercell connections
 - 2. Short term (2 Minute) discharge test using the inverter as the load to evaluate battery condition. (Only with customer prior approval)
 - 3. All battery data recorded in site log book.

- (D) Final Checks - System energized and carrying customer's load.

1. Verify final voltage and current on the following:
 - a) Rectifier input
 - b) Rectifier output
 - c) Inverter output
 - d) Alternate line
- (E) Report - The service engineer shall provide a detail service report to the TSC Manager along with any service recommendations for additional service which they believe may be required but not covered under their service agreement.

Method of Measurement. Each inspection that is completed shall be recorded on vendor furnished forms, with all its corresponding deficiencies noted and the inspection report submitted to the Engineer. Any necessary repairs shall be paid on an as needed basis through vendor item.

Basis of Payment. This item shall be paid at the contract unit price each for the UPS SYSTEM, INSPECTION, which shall be payment in full for the work described above.

SU02 U.P.S. SYSTEM, STORAGE BATTERY, REMOVE AND REPLACE

Description. This item shall consist of removal, disposal and replacement of a existing storage battery for U.P.S. system located at TRAFFIC SYSTEMS CENTER, 445 West Harrison St., Oak Park, Illinois.

Materials. All materials shall conform to Power Ware VRLA Battery PWHR 12500W4FR Float voltage 13.5-13.8 volts or equivalent.

Basis of Payment. This work will be paid at the contract unit price each for a U.P.S. SYSTEM, STORAGE BATTERY, REMOVE AND REPLACE, which price shall be payment in full for all necessary removal and disposal of existing storage battery and installing new storage battery.

SV01 VENDOR BUDGETARY ALLOWANCE FOR REPAIR SERVICES

Description. This item is to establish a budget account to allocate funds for the payment of various types of non-routine repair services required for those changeable message signs utilizing Telespot equipment and components.

These services, including associated modifications to the equipment, are required for the continuing maintenance program but which can not be accurately or completely identified nor specified properly as necessary for preparation of the bidding document for this contract because of Telespot's apparent discontinuance of manufacturing and support. This item requires immediate service to support the operational requirements of freeway-installed changeable message signs but is not for services included under Routine Maintenance.

Basis of Payment. The Engineer will evaluate the quotations and authorize work accordingly. The total estimated amount of annual expenses to be incurred for goods and services performed under this item is \$40,000 as indicated under pay item SV1, as a budgetary allowance for repair services.

SV02 VENDOR BUDGETARY ALLOWANCE FOR ATMS MAINTENANCE/SUPPORT

Description. This item is to establish a budget account to allocate funds for ATMS maintenance and support from the approved vendors of the hardware and software to continue maintenance and support of the ATMS at the Traffic Systems Center.

These services, including associated modifications to the equipment, are required for the continuing maintenance program but which can not be accurately or completely identified nor specified properly as necessary for preparation of the bidding document for this contract. This item is for immediate service to support the operational requirements of the traffic management system but is not for services included under Routine Maintenance.

Basis of Payment. The Engineer will evaluate the quotations and authorize work accordingly. The total estimated amount of annual expenses to be incurred for goods and services performed under this item is \$75,000 as indicated under pay item SV02, as a budgetary allowance for repair services.

TRAFFIC SIGNAL SYSTEM NON-ROUTINE PAY ITEMS

TC01–TC02 FULL ACTUATED CONTROLLER IN CABINET

Description. This item shall conform with sections 857 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications except as revised herein. All equipment shall be NEMA TS 2 Type 1 unless otherwise approved by the Engineer. At the time this item is authorized, the Signal Engineer may indicate what brand of equipment is to be supplied for that authorization. Installation of controller and cabinet, including all testing, shall be included in these items. Removal of any existing controller, cabinet, and all other related equipment in the cabinet is considered included in this item. The Contractor shall deliver the removed equipment to the state stock storage location per the requirements within the contract.

Basis of Payment. This work shall be paid at the contract unit price each for FULL ACTUATED CONTROLLER IN CABINET of the type specified as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC01 Full Actuated Controller In Type IV Cabinet

TC02 Full Actuated Controller In Type V Cabinet

TC03 FULL ACTUATED CONTROLLER IN TYPE IV CABINET WITH RR EQUIPMENT

Description. This item shall conform with sections 857 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications and the provision of Pay Item TC1 in this contract except as revised herein. The controller and cabinet furnished is to be installed at an intersection which is interconnected with a railroad gate controller cabinet. Equipment shall be NEMA TS 2 Type1 unless otherwise approved by the Engineer. At the time this item is authorized, the Signal Engineer may indicate what brand of equipment is to be supplied for that authorization. At all Railroad locations which are not part of a closed loop system (stand alone), the controller and cabinet shall meet the following. The controller cabinet shall contain a 56 kbps auto dial/Auto answer modem. The cabinet shall be provided with an outdoor network interface for the termination of the telephone service. It shall be mounted to the inside of the cabinet suitable to provide access for the termination of the telephone service and shall be equipped with a standard three electrode heavy duty gas tube surge arrestor. Installation of controller and cabinet, including all testing, shall be included in this item. Removal of any existing controller, cabinet, and all other related equipment in the cabinet is considered included in this item. The Contractor shall deliver the removed equipment to the State stock storage location per the requirements within the contract.

Basis of Payment. This work shall be paid at the contract unit price each for FULL ACTUATED CONTROLLER, IN TYPE IV CABINET WITH RAILROAD EQUIPMENT as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC04 FULL ACTUATED CONTROLLER

Description. This item shall conform with sections 857 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications. Equipment shall be NEMA TS 2 Type 1 unless otherwise approved by the Engineer. At the time this item is authorized, the Signal Engineer may indicate what brand of equipment is to be supplied for that authorization. Removal of the existing controller and related items, if required, shall be considered included in this item. The Contractor shall deliver the existing equipment to the State stock storage location per the requirements within the contract.

Installation of the controller and testing shall be included in this item. When installing the new controller into an existing system, the new controller shall contain all necessary telemetry modules, modems, circuit panels and wiring harnesses. All items necessary to

enable the controller to communicate/operate within an existing FSK closed loop system or an existing fiber optic closed loop system shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for FULL-ACTUATED CONTROLLER as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC05–TC06 INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER OR CONTROLLER AND CABINET

Description. These items shall conform with sections 857 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications except as revised herein. Included in the above pay items are the replacement and/or addition of controller harnesses, conflict monitor harnesses, and detector harnesses as required to install the existing controller and/or cabinet at a location directed by the Signal Engineer. The current controller software at time of field installation shall be included in these items. The Contractor shall provide five (5) copies (11" x 17") of the cabinet wiring diagrams for the new cabinet location. Cable logs must be furnished indicating the number of each cable, the field termination point, and all cables must be tagged with an I.D. number corresponding with the cable log. As included in this item, the Contractor shall transport the proposed equipment to the intersection and transport the existing equipment to the Contractor's location for state stock storage.

Basis of Payment. This work shall be paid at the contract unit price each for INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER, OR CONTROLLER AND CABINET as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC05 INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER
TC06 INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER AND CABINET

TC07 CONTROLLER CABINET, TYPE IV OR TYPE V

Description. This work shall consist of furnishing and installing a cabinet and peripheral equipment for an existing traffic signal controller.

Materials. Materials shall be according to the following Articles of Section 1000 – Materials:

Item	Article/Section
Controller Cabinet and Peripheral Equipment	1074.03

General. The cabinet shall be furnished with panel, terminal facilities, conflict monitor, load switches, and flasher relays complete with necessary connections for proper operation. The type of cabinet shall be as specified on the plans.

Basis of Payment. This work shall be paid at the contract unit price each for CONTROLLER CABINET, as described above, of the type specified as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC08 CONTROLLER AND CABINET MODIFICATION

Description. This item shall conform with Section 857 of the Standard Specifications for Road and Bridge construction. This work shall consist of controller and cabinet revisions to provide an additional phase, phase overlap, or pedestrian movement to an existing traffic signal. This work to include but not limited to installing a load switch cabinet wiring, and reprogramming the controller per plans or as directed by the engineer.

Basis of Payment. This work shall be paid for at the contact unit price each to provide CONTROLLER AND CABINET MODIFICATION as described above, which price shall be payment in full for all work described herein and as directed by the Signal Engineer.

TC09–TC10 COMMUNICATIONS CONTROL EQUIPMENT

Description. This item shall conform with sections 857 and 864 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications except as revised herein. This item may be used in conjunction with the items for "Full Actuated Controller in Cabinet" or it may be used with an existing cabinet. This item shall include the installation of all items necessary to enable the controller and cabinet to communicate as part of either an FSK or fiber optic closed loop system, as specified. Any modifications or equipment which needs to be removed from an existing cabinet to convert it from FSK/wire to fiber optic shall be included in this item. The Contractor shall deliver any existing equipment to the State stock storage location per the requirements of the contract.

Basis of Payment. This work shall be paid at the contract unit price each for COMMUNICATIONS CONTROL EQUIPMENT of the type specified as described above, which price will be payment in full for all work as described herein and as directed by the Signal Engineer.

TC09 FSK/Wire Communications Control Equipment
TC10 Fiber Optic Communications Control Equipment

TC11 TRAFFIC SIGNAL MASTER CONTROLLER

Description. This item shall conform with section 860 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications except as revised herein. Equipment shall be NEMA TS 2 Type 1 unless otherwise approved by the Engineer. The master controller may be installed in an existing controller cabinet replacing an existing master controller of the same, or different, manufacturer or at a new location. In all cases the Contractor shall furnish all necessary harnesses, relays, modems, transceivers, and telephone jack to place the proposed traffic signal master controller in operation. Locations where the master controller is installed within an existing system without the local traffic signal controllers being replaced, it shall be of the same manufacturer as the local controllers. The closed loop systems presently in use are manufactured by Siemens/Eagle Signal and Econolite Corporation. At the time this item is authorized, the Signal Engineer will indicate which manufacturer's equipment is to be supplied for that authorization. At the completion of installing the proposed master controller the Contractor shall, if applicable, remove the existing master controller, harnesses, relays, modems, and transceivers that are not used and deliver them to the State stock storage location per the requirements within the contract. A telephone line and modem for proper communication if not pre-existing shall be paid for separately under the item "Telephone Line and Modem".

Basis of Payment. This work shall be paid at the contract unit price each for TRAFFIC SIGNAL MASTER CONTROLLER as described above, which price shall be payment in full for all work as described herein and directed by the Signal Engineer.

TC12 INSTALL TELEPHONE LINE AND MODEM

Description. This item shall conform with section 857 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic signal Specifications except as revised herein. This work shall consist of providing a phone line from the Illinois Bell System to a traffic signal controller cabinet to provide a working remote monitoring capabilities by the IDOT Traffic Signal Engineer in the Schaumburg office. The phone line shall be capable of providing regular or ISDN communication as required by the Engineer. The contractor shall provide an approved phone company junction box inside the controller cabinet, a 56K band modem as recommended by the equipment supplier, and all wiring necessary to the master controller or controller to provide proper communications. Able and conduit from the Illinois Bell System to the cabinet phone junction box will be paid for separately.

The contractor shall accomplish this work in the following process utilizing District 1 staff:

As soon as practical or within one week after the contract has been awarded, the Contractor shall contact (via phone) the Administrative support Manager in the District 1 Business Services Section at 847-705-4011 to request a phone line installation.

A follow-up fax transmittal to the Administrative Support Manager (847-705-4712) with all required information pertaining to the phone installation is required from the Contractor within one week after the initial request has been made. A copy of this fax transmittal must also be faxed by the Contractor to the Traffic Signal Systems Engineer at 847-705-4089. The required information to be supplied on the fax shall include (but not limited to): A street address for the new traffic signal service is needed; the name and number of the Contractor's employee for the telephone company to contact regarding site work and questions.

The usual time frame for the activation of the phone line is 4-6 weeks after the Business Services Section has received the Contractor supplied fax. It is, therefore, imperative that the phone line conduit and pull-string be installed by the Contractor in anticipation of this time frame. On jobs which include roadway widening in which the conduit cannot be installed until this widening is completed, the Contractor will be allowed to delay the phone line installation request to the Business Services Section until a point in time that is 4-6 weeks prior to the anticipated completion of the traffic signal work.

The telephone line shall be installed and activated one month before the system final inspection.

All phone company costs associated with the telephone line installation and activation (not including the contract specified conduit installation between the point of telephone service and the traffic signal controller cabinet) shall be paid by the district One Business Services Section (i.e., this will be an IDOT phone number not a Contractor phone number).

Basis of Payment. This work shall be paid for at the contract unit price each and to install a working INSTALL TELEPHONE LINE AND MODEM as described above, which price shall be payment in full for all work as described herein and directed by the Signal Engineer.

TC13 INSTALL UPDATED PROM SET AT EXISTING LOCAL OR MASTER CONTROLLER

Description. This item shall consist of installing a new PROM or set of PROMS of the latest version of software in an existing traffic signal local or master controller. At locations that contain coordination modules, all PROMS in the controller, telemetry module, and coordination module must be of the same version and revision. New system interface board shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for INSTALL UPDATED PROM SET AT EXISTING LOCAL OR MASTER CONTROLLER, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC14 NEMA CONFLICT MONITOR/ MMU WITH EVENT LOGGING

Description. This item shall conform with sections 857 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications except as revised herein. This item includes all labor and harnesses required to install an EDI Model SSM-12LE or MMU-16 NEMA type conflict/voltage monitor with event logging or an approved equal in an existing traffic signal controller cabinet as directed by the Signal Engineer. Remove all existing conflict monitor/ MMU harnesses not reused and the existing conflict monitor/ MMU from the cabinet and deliver them to the State stock storage location per the requirements of the contract.

Basis of Payment. This work shall be paid at the contract unit price each for NEMA CONFLICT MONITOR/ MMU WITH EVENT LOGGING as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TC15 UPS SYSTEM

Description. This specification sets forth the minimum requirements for a system that provides an uninterruptible power supply (UPS) for signalized intersections. This work shall consist of furnishing and installing a UPS as specified by the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications.

Basis of Payment. This work shall be paid at the contract unit price each to install UPS SYSTEM as described above, which price shall be payment in full for all work as described herein including replacement of any incandescent EVP confirmation beacon with LED type and as directed by the Signal Engineer.

TCS1 PORTABLE CHANGEABLE MESSAGE SIGN

Description. This specification sets forth the minimum requirements for use of a portable changeable message sign intended to advise motorists of future or current conditions. This device should operate with LEDs, have a programmable message sign capable of displaying varying fonts, and alphanumeric messages. The device must be capable of displaying three lines with a minimum 12" x 18" characters.

The sign must be solar powered with battery back up. The message should be legible from a minimum of 600' and have a total display of at least approximately 70" x 120". Ver-macPCMS-1210, Wanco WTMMB-s-LL(A), or approved equivalent.

Basis of Payment. This work shall be paid for at the contract unit price each for Portable Changeable Message Sign, which shall include payment in full for furnishing, installing and removing, maintaining, and programming one sign for a minimum of fourteen (14) days or as directed by the Engineer.

TD01 DRILL EXISTING HANDHOLE

Description. Refer to District 1 Traffic Signal Specifications.

Basis of Payment. This work shall be paid at the contract unit price each for DRILL EXISTING HANDHOLE as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TE01–TE06 AND TEC1–TEC2 ELECTRIC CABLE

Description. This item shall conform with section 873 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications, or as directed by the Engineer. When a new cable is being installed to replace an existing cable, the removal of the existing cable shall be included in this item. This item shall be used for cable installed in a raceway, conduit or aerial suspended.

Basis of Payment. This work will be paid at the contract unit price per foot of ELECTRIC CABLE of the type, size, and number of conductors specified, which price shall be payment in full for furnishing the material, making all electrical connections, and installing the cable complete.

The type specified will indicate whether it is shielded and the method of installation. For example:
Electric Cable No. 14, 2/C Twisted, Shielded.

TE01 Electric Cable No. 14 2/C
TE02 Electric Cable No. 14 3/C
TE03 Electric Cable No. 14 5/C
TE04 Electric Cable No. 14 7/C
TE05 Electric Cable No. 14 2/C, Twisted Shielded

TE06 Electric Cable No. 18, 3 Pair, Twisted Shielded
TEC1 Electric Cable in Conduit, Tracer No. 14 1/C
TEC2 Electric Cable No. 14, 3/C, Railroad

TF01–TF06 CONCRETE FOUNDATIONS

Description. These items shall conform with Section 878 of the Traffic Specifications and District 1 Traffic Signal Specifications and as directed by the Signal Engineer.

Basis of Payment. This work will be paid at the contract unit price per foot of depth for CONCRETE FOUNDATION of the type specified, which price shall be payment in full for all necessary excavating or drilling, backfilling, disposal of unsuitable material, form work, and furnishing all materials within the limits of the foundation including anchor bolts. If rock excavation is required it will be paid in accordance with Article 109.04 of the Standard Specifications.

TF01 Concrete Foundation, Type A
TF02 Concrete Foundation, Type D
TF03 Concrete Foundation, Type C
TF04 Concrete Foundation, Type E 30 inch Diameter
TF05 Concrete Foundation, Type E 36 inch Diameter
TF06 Concrete Foundation, Type E 42 inch Diameter

TF07 CONCRETE FOUNDATION, REBUILD/MODIFY, TYPE D

Description. This item shall consist of the partial removal of an existing Type "D" Foundation at the location on the plans or as directed by the Signal Engineer. The existing foundation shall be removed to a depth of at least 0.3048m (twelve inches) below finished grade. The disposal of the concrete debris outside of the right-of-way shall be included in this item. The existing conduit shall remain in place and shall be carefully protected. The new conduits from the double handhole shall be installed, if required, as shown on the plans.

Installation. Upon completion of the above work, holes for steel dowels of the size indicated shall be drilled in the remaining concrete where indicated on the drawings.

The adjacent area shall be excavated and formed with anchor bolts and new conduit stubs to provide a concrete foundation for a Type IV cabinet as per the current Highway Standard, "Concrete Foundation Details". The Contractor shall follow the recommendations of the manufacturer, subject to approval of the Engineer.

Provide a 36" x 48" x 5" P.C.C. apron sidewalk on the side of the access door to the controller to facilitate servicing the controller.

Anchor bolts shall be new and shall meet all the requirements of sections 800 and 1000 of the Standard Specifications for Road and Bridge Construction.

Basis of Payment. This work shall be paid at the contract unit price each for CONCRETE FOUNDATION, REBUILD/MODIFY, TYPE D, which price shall be payment in full for all labor, materials, and equipment necessary to complete the work described above and as indicated on the drawings. The removal of the existing controller shall be included in this pay item, as well as the pulling and reinstalling of the existing cable from conduit.

TFB1 FLASHING BEACON, POST MOUNT, 1 FACE

Description. This item shall conform with sections 800 and 1000 of the Standard Specifications for Road and Bridge Construction. District 1 Traffic Signal Specifications and the current Highway standard, "Details of Spanwire Mounted Signal and Flashing Beacon Installation" except as revised herein. This item shall consist of installing a post mounted 300mm (twelve inch) L.E.D. single section red or yellow flashing beacon on an existing post as shown on the plans or directed by the Signal Engineer. This item shall include furnishing and installing a flasher controller in an aluminum cabinet, or integrated within the head, service installation (post mounted), 300mm (twelve inch) L.E.D. red or yellow signal section with a dimmer if required by the Signal Engineer, and all other included necessary to complete the installation.

As directed by the Signal Engineer or if shown on the plans, the Contractor may be instructed to provide LED displays as opposed to standard incandescent signal sections. All lamps are considered included in this item.

Basis of Payment. This work shall be paid at the contract unit price each to install FLASHING BEACON, POST MOUNT, 1 FACE as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TFB2 FLASHING BEACON, SPAN WIRE MOUNTED

Description. This item shall conform with the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications and the current Highway standard "Details of Spanwire Mounted Signals and Flashing Beacon Installations" except as revised herein. This item shall include furnishing and installing a flasher controller in an unpainted aluminum cabinet, or integrated within the head, service installation (post mounted), any number of 300 mm (twelve inch) L.E.D. signal faces, red or yellow with a dimmer if required by the Signal Engineer, wood poles, span wire and span wire accessories, electrical conduit, electric cable, trench and backfill and all other included necessary to complete the installation.

As directed by the Signal Engineer or if shown on the plans, the Contractor may be instructed to provide LED displays as opposed to standard incandescent signal sections. All lamps are considered included in this item.

Basis of Payment. This work shall be paid at the contract unit price each to install FLASHING BEACON, SPAN WIRE MOUNTED as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TFB3 FLASHING BEACON, SOLAR, POST MOUNT, 1 FACE

Description. This item shall conform with sections 800 and 1000 of the Standard Specifications for Road and Bridge construction and District One Traffic Signal Specifications. This item shall consist of furnishing and installing a 300mm (12-inch) single red or yellow flashing module on a new or existing post as shown on the plans or directed by the engineer. This item shall include furnishing and installing a flasher controller that is integrated within the signal head, with discrete solar panels, LED module, battery, electronics, compact housing and capable of operating 24 hours, 7 days a week.

The flasher unit shall install on standard wood or metal posts. The flash pattern shall be MUTCD compliant and have alternate flash patterns available. The LED module shall be ITE VTCSH-STD Part-2 compliant.

The flasher unit shall operate over a maximum temperature range of -40° F to 176° F.

The battery shall have a life span of a minimum of 5 years and be field replaceable. The battery and electronics may be located inside the solar panel housing or signal head.

The sections of the flasher unit shall be secured with tamper resistant stainless steel hardware and unless otherwise noted, the housing shall be black in color.

Basis of Payment. This work shall be paid for at the contract unit price each for FLASHING BEACON, SOLAR, POST MOUNT, 1 FACE FLASHER UNIT, of the color LED, as described above, which price shall be payment in full for furnishing and installing a post mounted flasher with all mounting hardware.

TGS1 ADDITIONAL GROUNDING AND ELECTRIC SERVICE UPGRADE

Description. The Contractor shall perform additional electric service and grounding upgrades as specified to the traffic signal system locations as designated by the Engineer. (This work is for additional locations, over and above the 200 locations to be upgraded under routine maintenance).

Work Description. The contractor is responsible for scheduling the work and for coordinating with the engineer whenever Engineer-witness functions are required. The contractors shall also advise the engineer when each location is complete and shall provide a written certification to that effect. The Engineer reserves the right to require a final inspection of the modification at any or all of the locations certified as complete. Should deficiencies be found upon inspection, a corrective work list will be prepared.

The traffic signal installations being modified shall be kept operational at all times except as expressly allowed herein or otherwise permitted by the Engineer. The Contractor shall be responsible for all traffic control and temporary provisions required for the work, all at no additional cost to the pay item. All cable, conduit, fittings and accessories shall be new. All materials and work shall be in conformance with the requirements of applicable contract specifications and article 250 of the National Electrical Code.

The Contractor shall be responsible for coordination with the Electric Utility as necessary and shall be responsible for reporting any account modifications arising from the work to the Engineer in a timely manner. Although it is anticipated that all service agreements and accounts will remain as-is, if new agreements are required, the Contractor shall facilitate coordination between the Electric Utility and the Engineer, with the department to sign any appropriate new agreements. Only momentary outage of a traffic signal location undergoing modification will be allowed, and the contractor shall provide generator power or make temporary service connections as necessary to assure continuity of operations as modifications are made.

The work will generally include:

- Replacement of the electric service entrance equipment and cables
- New grounding of the service
- New feeder conductors from the service disconnect to the controller cabinet

Cabinet grounding modifications
Supplementary ground electrodes at handholes
Extension of equipment ground wires to all poles, posts, handholes, etc.
Bonding of equipment ground to all exposed metal parts
Testing and documentation

Replace Electric Service Entrance

The work shall include the removal of the existing service disconnecting means and the service conductors and shall include the furnishing and installing a new pole-mounted service disconnecting means and new service conductors, based on the manner of the existing service. The new electric service disconnect, cables and the service connection shall be in accordance with details included herein, and Figure L-3A, as shown in Volume 1, Article 7, unless specified otherwise by the Engineer to meet special requirements of certain locations, pedestrian traffic, etc.

Provide New System Ground of Electric Service

The work shall include the installation of a new system ground, connected to the ground bar of the service disconnect, using one or more ground rod grounding electrodes, or other means approved by the Engineer. The system ground shall have a resistance to earth not to exceed 10 ohms without connection to the additional electrodes established at poles or other points at the traffic signal location. The system ground resistance shall be verified by a contractor test, using the fall-of potential method and witnessed and approved by the engineer, with a record of the test entered by the Contractor and signed by the Contractor and the Engineer. Should more than one electrode be required to establish a low enough resistance, additional electrodes shall be connected to the grid, with re-testing. All ground electrode connections shall be exothermically welded. Ground rods and grounding electrode conductors shall be as specified and detailed.

The service grounded circuit conductor (which may or may not be a system neutral) shall be bonded to the system ground at the service disconnect and shall be isolated from ground throughout the remainder of the electrical distribution.

Extend New Conductors to Controller

A new ground terminal bar shall be installed at the traffic signal control cabinet and this bar shall be bonded to the cabinet enclosure. The work shall include the replacement of the existing feeder and the extension of new feeder conductors from the service disconnect to the traffic signal control cabinet. The cable will be a multi-conductor jacketed cable as specified and it shall include a green-insulated ground wire to bond the service ground bar to the controller cabinet ground bar. The contractor shall confirm the integrity of the existing feeder conduit run, and shall clean the run before installing the new feeder. If the size of the conduit is demonstrated to be inadequate for the new feeder cable or if it is demonstrated as not re-usable for some other reason and no other alternative is feasible, the contractor shall use a new feeder conduit run, as part of this pay item, with all cable work remaining as the Contractor's responsibility at no additional cost to the pay item.

Cabinet Grounding Modifications

The contractor shall confirm the presence of a terminal bar, with suitable terminals, for the grounded circuit conductor (white wire) at the controller cabinet and shall assure isolation of this bar from the cabinet enclosure and other grounded parts. If the existing bar is inadequate or is not isolated properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items. Similarly, the contractor shall confirm the presence of a ground bar, with suitable terminals, which is bonded to the cabinet enclosure and grounded metal parts. If the existing ground bar is inadequate or is not bonded properly, the Contractor shall provide a new bar or otherwise correct the installation, removing any incorrect items, as included in this pay item.

Supplementary Ground Electrodes

A ground rod shall be driven at traffic signal handholes present at each corner of a location (but not within the roadway) except for handholes within 15 feet of the service ground electrode. The ground rods shall be as specified and all connections directly to the ground rods shall be exothermically welded.

Extension of Equipment Ground

The contractor shall extend an equipment ground conductor from the ground bar in the controller cabinet to distributed elements of the system, bonding the equipment ground conductor to all handhole frames, metal poles and other enclosures, metal conduit, etc., including any existing supplemental ground rods that may be in place. The Contractor shall assure that good equipment ground continuity and a low-impedance ground return path is established throughout for all exposed metal parts of the installation.

It is not the intent of this work item to require re-cabling of the traffic signal load equipment to achieve grounding. In all cases, a green-insulated ground conductor shall be used whenever possible, and only if conduit space will not accommodate an insulated conductor will a bare conductor be allowed. A common conductor may be employed for multiple load circuit cables in a given conduit, but an equipment ground conductor shall be run with or shall encircle each set of circuit conductors extended from the controller cabinet.

Recognizing the intent to leave existing conductors in place and operations, the contractor may choose from among identified and prioritized acceptable alternative to affect the grounding modifications:

If an existing conduit will accommodate the installation of a ground wire, the ground wire shall be installed within the conduit with the circuit conductors. Existing conductors should only be withdrawn from a conduit run to facilitate pulling of the ground wire if absolutely necessary.

If an existing metal conduit will not accommodate the required ground wire, and if the contractor can identify end-to-end electrical continuity of the conduit, the contractor may bond to the conduit externally in an approved manner to establish ground continuity, thus using the metal conduit as the equipment ground conductor.

If a given conduit run is demonstrated to be damaged and electrically discontinuous in the presence of the Engineer, and if no other alternative is feasible, the engineer will authorize a new conduit run, to be paid under separate pay time, with all cable installation to remain part of the grounding modification work at no additional cost to the pay item. When a new conduit is installed, an insulated ground conductor must be installed within, together with the circuit conductors, regardless of the ground continuity of the new conduit, and the new conduit shall be appropriately bonded to the equipment ground.

Bonding

The Contractor shall establish equipment ground bonding to the cover frame of every handhole with an approved connection. The contractor shall establish equipment ground bonding at every metal pole, post or other enclosure or device, also with an approved connecting. At poles or post bases, it may be possible to install washers, lugs, and extra nuts where extra anchor bolt protrusion allows it. Otherwise, poles may be drilled and tapped and fitted with appropriate ground lugs. Connections at poles and other enclosures shall be pigtailed from splices whenever more than one ground conductor is connected so that ground continuity is not dependent upon ground lug connection. Splices of ground conductors (in lieu of exothermic weld connectors) will be permitted at poles or other such connection point above grade, with splices to be made using suitable copper crimp sleeves and heat-shrink insulated caps as specified.

Testing and Documentation

As noted above, the system ground resistance to earth shall be tested, in isolation from equipment ground extensions from that point. Testing shall be performed by the contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the contractor and witnessed by the Engineer.

Special Considerations

Temporary signal installations and other span-wire installations shall be included in the scope of service and grounding modifications. For span-wire installations, the messenger wire shall be employed as an equipment ground conductor and taps shall be made to this wire to extend an equipment ground connection

to appropriate exposed metal parts. A service grounding electrode shall be established at the electric service disconnect and a ground rod shall be installed and connected at one pole per quadrant.

Method of Measurement. Each traffic signal grounding modification and electric service upgrade as performed as specified and inspection report submitted and approved by the Engineers shall be counted as unit for payment.

Basis of Payment. This item shall be paid at the contract unit price each for TRAFFIC SIGNAL ADDITIONAL GROUNDING AND ELECTRIC SERVICE UPGRADE, which shall be payment in full for the work described herein.

TL01 INDUCTIVE DETECTOR LOOP

Description. This work shall consist of furnishing and installing inductive loop detector

Materials. Materials shall be according to the following Articles/Section 1000 – Materials”

Item	Article/Section
(a) Inductive Loop detector	1079.01

Construction Requirements:

Installation:

The inductive loop detector shall be installed inside traffic signal controller cabinet. The detector shall be either card rack type or shelf-mounted type. The detector may be single-channel, two-channel, or four-channel.

Basis of Payment. This work will be paid for at the contract unit price each for INDUCTIVE LOOP DETECTOR which price shall include the necessary connections and adjustment for proper operation.

If the detector unit has more than one complete detection channel, each compound detection channel will be considered as a detector for payment.

TL02 DETECTOR LOOP

Description. This item shall conform with sections 800 and 1000 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications and the District 1 Standard Traffic Signal Design Details, except as revised herein.

1. Asphalt Pavement

Detector loop which is to be installed in the proposed asphalt pavement must be placed in the pavement below the surface coarse. The location of each dive hole shall be marked on the face of the curb or handhole with a saw cut.

2. Existing Asphalt Pavement

Detector loop which is to be installed in an existing asphalt pavement shall be located to miss existing pavement cracks, if possible. The saw cut is to be filled with sealant to 3.0mm (one-eighth inch) below the surface of the pavement.

3. Concrete Pavement

Detector loop which is to be installed in concrete pavement must be placed to miss pavement joints and cracks, if possible. The saw cut is to be filled with sealant to one-eighth inch below the surface of pavement.

Loop Preparation

All detector loop saw cuts shall be a minimum of one and one half inches and a maximum of two inches, and the depth shall be equal to the saw cut. Saw cuts across the corners are NOT allowed. The saw cut shall be a minimum of five-sixteenths inches wide and cut in accordance with local and EPA dust control requirements. Detector loop(s) shall not be installed in wet conditions and the saw cuts must be free of debris and residue such as dust and water which is to be achieved by the use of compressed air, wire brushing and heat drying according to sealant manufacturer requirements. The detector wire shall be held in place by the use of form wedges of sufficient diameter and strength to hold the wire one inch below the surface of the pavement. Wedges shall be spaced no more than eighteen inches apart. The wire from the detector loop to the handhole shall have six twists per foot and have a separate unit duct raceway from the edge of pavement to the handhole. The unit duct shall be one foot into the pavement and loop under the curb and gutter. The unit duct shall be placed at a thirty inch depth.

Contractor Loop Identification

The loop detector wire shall be spliced in the handhole and each lead-in wire shall be labeled in the handhole using a Conduit 250W175C waterproof tag or approved equal secured to each wire with nylon ties. Each lead-in cable tag shall indicate the location of the loop, loop rotation (clockwise/counterclockwise), loop lead-in direction (in or out), loop cable number, location in cabinet, and number of turns in the detector loop using waterproof ink as indicated on the District 1 Loop Detail. The Contractor shall mark loop locations on as-built plans and present to the Engineer after final inspection.

Six foot round loop(s) may be substituted for six foot by six foot square loop(s) and shall be paid as 24 feet of detector loop.

Basis of Payment. This work shall be paid at the contract unit price per foot for DETECTOR LOOP as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TLS1 LED ILLUMINATED SIGN

Description. This item shall conform with the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications, except as revised herein. This work shall consist of furnishing and installing an Illuminated Sign, LED type with blank out ability indicating the symbolic legend for "No Right Turn" or "No Left Turn" as required by the Signal Engineer.

Basis of Payment. This work shall be paid at the contract unit price each for LED ILLUMINATED SIGN which price shall be payment in full for furnishing and installing the illuminated sign complete.

TM01 MICROWAVE VEHICLE SENSOR

Description. This item shall consist of furnishing and installing a Microwave Vehicle Sensor in accordance with these requirements.

The microwave vehicle sensor shall be approved by IDOT before furnishing and installing. The Contractor shall install, wire, and adjust the alignment of the sensor in accordance to the manufacturer's recommendations and requirements. The installation shall be approved by the Engineer.

The microwave vehicle sensor shall meet the following requirements:

- Detection Range - Adjustable to 60 feet
- Detection Angle - Adjustable, horizontal and vertical
- Detection Pattern -16° beam width minimum. (at 50' the pattern shall be approximately 15.5' wide)
- Mounting -Heavy duty bracket, predrilled and slotted for pole mounting
- Visible detection indicator light

Basis of Payment. This work will be paid at the contract unit price each for MICROWAVE VEHICLE SENSOR, which price shall be payment in full for furnishing and installing the Microwave Vehicle Sensor complete in place.

TMA1–TMA5 STEEL MAST ARM ASSEMBLY AND POLE

Description. This item shall conform to the requirements of sections 877 of the Standard Specifications for Road and Bridge Construction, the District 1 Traffic Signal Specifications and the current Highway Standard, "Steel Mast Arm Assembly and Pole", except as revised herein.

Prior to the final acceptance of any Steel Mast Arm Assembly and Pole, Contractor must furnish to the Engineer a certified, notarized mill analysis of the material used in the Steel Mast Arm Assembly and Pole.

This item, when applicable, shall include the relocation of existing sign panels currently installed at the location.

If the proposed mast arm assembly is replacing an existing mast arm, the removal of the existing mast arm assembly shall be included in this item. The Contractor shall retain ownership of the existing mast arm assembly.

The mast arm shroud shall be included in this item and shall be galvanized steel or extruded aluminum for protection of the mast arm pole base plate similar to the dimensions detailed in the "District 1 Standard Traffic signal Design Details." The shroud shall be of sufficient strength to deter pedestrian and vehicular damage. The shroud shall allow it to circulate throughout the mast arm but not allow manifestation of insects or critters. The shroud shall be constructed, installed, and designed not to be hazardous to probing fingers and feet. All mounting hardware shall be stainless steel.

Shroud shall fit any pole size supplied by the manufacturer

Basis of Payment. This work shall be paid at the contract unit price each for furnishing and installing a STEEL MAST ARM ASSEMBLY AND POLE as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

- TMA1 Steel Mast Arm Assembly and Pole 16 ft to 28 ft
- TMA2 Steel Mast Arm Assembly and Pole 30 ft to 44 ft
- TMA3 Steel Mast Arm Assembly and Pole 46 ft to 55 ft
- TMA4 Steel Mast Arm Assembly and Pole 56 ft to 65 ft
- TMA5 Steel Mast Arm Assembly and Pole 66 ft to 75 ft

TMA6 RELOCATE OR INSTALL EXISTING MAST ARM ASSEMBLY AND POLE

Description. This item shall conform with sections 877 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications except as revised herein. The Mast Arm Assembly and Pole shall come from State stock or be relocated from one foundation to another foundation at the same intersection or another intersection as indicated on the plans. All transportation costs to move the mast arm assembly and pole from State stock to an intersection or from intersection to intersection are included in this item. Existing holes in the Mast Arm Assembly and Pole shall be plugged as directed by the Signal Engineer. If the existing mast arm has an existing galvanized metal shroud, it shall be relocated along with the mast arm as included in this item. Otherwise, the Contractor shall be required as part of this item to install at the base of the mast arm, stainless steel screening in accordance with the Standard Specifications; or the Contractor may be required to install a mast arm shroud as described in TMA1-5 in lieu of stainless steel screening as directed by the Signal Engineer. The cost of furnishing and installing a new shroud shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for RELOCATE OR INSTALL EXISTING MAST ARM ASSEMBLY AND POLE, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TPP1 PEDESTRIAN PUSH-BUTTON POST, GALVANIZED STEEL,TYPE II

Description. This work shall consist of furnishing a pedestrian push-button post and installing it on a concrete foundation.

Materials. Materials shall be according to the following Articles of section 1000 – Materials:

Item	Article/Section
a. Traffic signal Post	1077.01
b. Concrete	1020

Construction Requirements.

Installation.

The pedestrian push-button post shall be installed plumb on a concrete foundation according to the details shown on the plans. The contractor shall apply an anti-seize post compound on all nuts and bolts prior to assembly.

The foundation shall be made Class SI concrete.

Basis of Payment. This work will be paid for at the contract unit price each for PEDESTRIAN PUSH-BUTTON POST, TYPE II, GALVANIZED STEEL, , which shall be payment in full for the work described herein.

TPP2 PEDESTRIAN PUSH-BUTTON

Description. This item shall conform with sections 888 and 1074 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Specifications except as revised herein. The Pedestrian Push-button assembly shall be one piece cast aluminum alloy with momentary LED such as the Campbell 4EVR 120 or Polara Bulldog type, or an approved equivalent and include pedestrian push button station and sign. See District One Specifications for Pedestrian Station and Sign Requirements.

Basis of Payment. This work shall be paid at the contract unit price each for PEDESTRIAN PUSH-BUTTON as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TR01 ROTATE SIGNAL PHASING AT AN EXISTING TRAFFIC SIGNAL INTERSECTION

Description. This item shall consist of revising the traffic signal phasing at an existing traffic signal intersection. The proposed sequence of operation shall conform with the current "Standard Phase Designation Diagrams and Phase Sequences" Highway Standard, the District's phase diagrams and notes, the District's chart sequence of operations or as directed by the Signal Engineer. The phase rotation shall consist of the following items to complete the phase rotation:

1. Modify all incoming field wiring to provide the new sequence of operations which includes all signal heads, pedestrian heads, internally illuminated signs, emergency vehicle preemption confirmation beacons, vehicle detectors, pedestrian detectors and system detectors.
2. Modify the controller programming and phase overlaps to provide the proposed sequence of operations.
3. All back panel modifications are required to provide the proposed sequence of operations and system detection.
4. The Contractor shall provide five (5) copies (11" x 17") of revised cabinet wiring diagrams and pdf files on CDROM.
5. The Contractor shall provide revised cable logs indicating the number of each cable, the field location the cable is terminated at, and all cables must be tagged with an I.D. number that corresponds with the revised cable log.

Basis of Payment. This work shall be paid at the contract unit price each for ROTATE SIGNAL PHASING AT AN EXISTING TRAFFIC SIGNAL INTERSECTION as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TR02 RE-ASSIGN SYSTEM DETECTORS

Description. This work shall consist of reassigning system detectors in an existing Closed Loop System as per the plan or as directed by the Signal Engineer. This may include rewiring system detectors to different inputs into the local controller, installing diodes to provide a second channel of detector output to use an existing local detector as a dual system/local detector, changing system detector assignments, wiring system detectors directly to a master controller or rewiring system detectors to different inputs in the master controller. Any additional amplifiers or dual output amplifiers that are necessary will be paid separately, otherwise all remaining materials and labor required to complete this work shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price for 1 each RE-ASSIGN SYSTEM DETECTORS, which will include all necessary reassigning of system detectors at one signalized intersection.

TS01 MANHOLE COVER AND FRAME GROUNDING FURNISH AND INSTALL

Description. Refer to TRAFFIC SIGNAL SPECIFICATIONS, effective January 1, 2002, revised May 22, 2002, herein.

Basis of Payment. This work shall be paid at the contract unit price each for MANHOLE COVER AND FRAME GROUNDING FURNISH AND INSTALL as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TSD1 LED SIGNAL DISPLAY

Description. This item shall consist of installing a 12" LED Display into an existing signal section or a new signal section. The LED display shall fit into the signal housing without any modifications to the housing and meet District 1 Traffic Signal Specifications. Removal of the existing lens and reflector shall be included in this item. The existing lens and reflector shall become the Contractor's property and the unit price should reflect the salvage value of these items.

Basis of Payment. This work shall be paid at the contract unit price each for LED SIGNAL DISPLAY, which price shall be payment in full for supplying and installing a display as described herein.

TSH1-TSH3 INCANDESCENT SIGNAL HEAD, 1 FACE

Description. These items shall conform with sections 880 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications, the current Highway Standard "Traffic Signal Mounting Details", and District 1 Standard Traffic Signal Design Details, except as revised herein. All traffic signal sections shall have incandescent optics with 300mm (twelve inch) lenses unless otherwise stated on the plans or as directed by the Signal Engineer. At locations where new signal heads are replacing existing signal heads, the removal of the existing signal heads and existing mounting hardware shall be included in these items and the Contractor shall retain ownership of the existing used signal heads.

All mounting hardware shall be new and shall be included in the pay item for signal head. The pay items listed below shall include either bracket mounts or mast arm mounts as required by the plans or directed by the Signal Engineer. Any modifications to mounting hardware shall be included in this item.

Mast arm mounted signal heads shall include louvered traffic signal backplates. The backplate shall be included in these items.

Basis of Payment. This work shall be paid at the contract unit price each for SIGNAL HEAD, 1 FACE of the number sections specified, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer. Removal, salvage, or disposal of existing heads and related mounting hardware and backplates shall be included in these items.

TSH1 Signal Head, 1 Face, 3 Section
TSH2 Signal Head, 1 Face, 4 Section
TSH3 Signal Head, 1 Face, 5 Section

TSH4 SIGNAL HEAD LENS

Description. This item shall conform with sections 880 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications, except as revised herein. The traffic signal replacement lens shall be installed in either a eight inch or twelve inch conventional signal section. The pedestrian replacement lens shall be installed in either a nine inch or 12 inch conventional rectangular pedestrian section. The proposed replacement lens must fit the existing section in a manner that dust and water are sealed out. The color and type of replacement lens will be indicated on the plans or as directed by the Signal Engineer. The replacement lens may consist of the following types: green ball, yellow ball, red ball, green arrow, yellow arrow, red arrow, walk or don't walk. The arrow lenses shall be of the straight through, right or left types and when an arrow lens has a designation of top inscribed the lens must be installed in the signal section with that orientation. The existing lens shall be removed and disposed of at the contractor's expense.

Basis of Payment. This work shall be paid at the contract unit price each for SIGNAL HEAD LENS, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TSH5 PEDESTRIAN INCANDESCENT SIGNAL HEAD, 1 FACE

Description. This item shall conform with sections 881 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications, the current Highway Standard "Traffic Signal Mounting Details" and District 1 Standard Signal Design Details, except as revised herein. All pedestrian signal sections shall have 300mm (twelve inch) lenses unless stated on the plans or as directed by the Signal Engineer. At locations where new pedestrian signal head(s) or faces are replacing an existing pedestrian signal head(s) or faces the removal shall be included in this item and the Contractor shall retain the used existing pedestrian signal head(s) or faces. All necessary mounting hardware or modifications to existing mounting hardware shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for PEDESTRIAN SIGNAL HEAD, 1 FACE, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TSL1-TSL8 LED SIGNAL HEAD, 1 FACE

Description. These items shall conform with sections 880 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications, the current Highway Standard "Traffic Signal Mounting Details", Special Provision for Light Emitting Diode (LED) Signal Head, and District 1 Standard Traffic Signal Design Details, except as revised herein. All traffic signal sections shall have 300mm (twelve inch) lenses unless otherwise stated on the plans or as directed by the Signal Engineer. At locations where new signal heads are replacing existing signal heads, the removal of the existing signal heads and mounting hardware shall be include in this item and the Contractor shall retain ownership of the existing used signal heads.

All mounting hardware shall be new and shall be included in the pay item for signal head. The pay items listed below shall include either bracket mounts or mast arm mounts as required by the plans or directed by the Signal Engineer. Any modifications to mounting hardware shall be included in this item.

Remotely Steerable Optics:

This item shall provide a visibility zone of red, yellow and green, without requiring louvers or other external blocking devices to achieve the end result. No indication shall result from external illumination nor shall one section illuminate another. The LEDs are steered using one (1) Wi-Fi enabled a PDA which is included in this contract. Manufacturer shall warrant the remotely steerable optic head to be free from defects in material and workmanship for a minimum of seven (7) years from date of turn-on.

Mast arm mounted signal heads shall include louvered traffic signal backplates. The backplate shall be included in the cost of the signal head.

Basis of Payment. This work shall be paid at the contract unit price each for LED SIGNAL HEAD, 1 FACE of the number of sections specified OR LED SIGNAL HEAD, OPTICALLY PROGRAMMED or REMOTELY STEERABLE OPTICS, 1 FACE of the number of sections specified, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer. Removal, salvage, or disposal of existing heads and related mounting hardware and backplates shall be included in these items.

- TSL1 LED Signal Head, 1 Face, 2 Section
- TSL2 LED Signal Head, 1 Face, 3 Section
- TSL3 LED Signal Head, 1 Face, 4 Section
- TSL4 LED Signal Head, 1 Face, 5 Section
- TSL5 LED Signal Head, Optically Programmed, 1 Face, 3 Section
- TSL6 LED Signal Head, Optically Programmed, 1 Face, 5 Section
- TSL7 LED Signal Head, Remotely Steerable Optics, 1 Face, 3 Section
- TSL8 LED Signal Head, Remotely Steerable Optics, 1 Face, 5 Section

TSL9 LED PEDESTRIAN SIGNAL HEAD, 1 FACE

Description. This item shall conform with sections 881 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications, the current Highway Standard "Traffic Signal Mounting Details" and District 1 Standard Signal Design Details, except as revised herein. All led pedestrian signal sections shall have 300mm (twelve inch) lenses unless stated on the plans or as directed by the Signal Engineer. At locations where new pedestrian signal head(s) or faces are replacing an existing pedestrian signal head(s) or faces the removal shall be included in this item and the Contractor shall retain the used existing pedestrian signal head(s) or faces.

All mounting hardware shall be new and shall be included in the pay item for signal head. The pay items listed below shall include either pole mounts or post mounts as required by the plans or directed by the Signal Engineer. Any modifications to mounting hardware shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for LED PEDESTRIAN SIGNAL HEAD, 1 FACE, as described above, which price shall be payment in full for all work as described herein including mounting hardware and as directed by the Signal Engineer.

TSL10 LED PEDESTRIAN SIGNAL HEAD, COUNTDOWN, 1 FACE

Description. This item shall conform with sections 881 of the Standard Specifications for Road and Bridge Construction, District 1 Traffic Signal Specifications, the current Highway Standard "Traffic Signal Mounting Details" and District 1 Standard Signal Design Details, except as revised herein. This work shall consist of furnishing and installing a pedestrian countdown signal head, with light emitting diodes (LED) of the type specified in the plan. At locations where new pedestrian signal head(s) or faces are replacing an existing pedestrian signal head(s) or faces, the removal shall be included in this item and the Contractor shall retain the used existing pedestrian signal head(s) or faces.

All mounting hardware shall be new and shall be included in the pay item for signal head. The pay item listed below shall include either pole mounts or post mounts as required by the plans or directed by the Signal Engineer. Any modifications to mounting hardware shall be included in this item.

Pedestrian Countdown Signal Head, Light Emitting Diode, shall be 16 inch (406mm) x 18 inch (457mm) and conform fully to the District 1 Traffic Signal Specifications.

Basis of Payment. This item shall be paid for at the contract unit price each for PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED, 1 FACE, which shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

TSR1 REMOVE SIGNAL SECTION OR HEAD

Description. This item shall conform with sections 880 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications, except as revised herein.

This item shall consist of removing an existing traffic signal head or section at a location shown on the plans or as directed by the Signal Engineer. The removal of an existing traffic signal head or section will be paid only when its removal or relocation is not included in another pay item. The existing signal section(s) or head(s), when removed, shall become the property of the Contractor and the salvage value of the head(s) or section(s) is to be reflected in the unit bid price.

A traffic signal head with multiple faces and/or pedestrian signals mounted on the same item shall be paid at 1 each for the complete or partial removal. All remaining holes in the post or mast arm shall be plugged and any additional hardware necessary for any remaining sections shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each to REMOVE SIGNAL SECTION OR HEAD, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TSR2 RELOCATE OR INSTALL EXISTING SIGNAL SECTION OR HEAD

Description. This item shall conform with sections 800 and 1000 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications except as revised herein. This item includes the relocation of traffic signal head(s) and pedestrian signal head(s). The combination of a traffic signal head and a pedestrian signal head mounted on the same traffic signal post, mast arm pole, or street lighting pole shall be considered a single unit and shall be paid as one (1) each relocate signal head. This item shall include removing a traffic signal head from one intersection, transporting it to another intersection and installing it at a new location or installing an existing signal head from State stock. Any modifications or adjustments to the existing signal head or programming of the existing signal head shall be included in this item.

All mounting hardware shall be new and shall be included in the pay item for signal head. The pay item listed below shall include either mast arm mounts, pole mounts or post mounts as required by the plans or directed by the Signal Engineer. Any modifications to mounting hardware shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each to RELOCATE OR INSTALL EXISTING SIGNAL HEAD, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TT01 SPAN WIRE TRAFFIC SIGNAL INSTALLATION

Description. This item shall conform with sections 890 of the Standard Specifications for Road and Bridge Construction, the District 1 Traffic Signal Specifications and the current Highway Standard, "Temporary Traffic Signal", except as revised herein.

The span wire traffic signal installation when completed shall become the property of the State of Illinois. All equipment and material shall be new.

The controller shall be one of the approved District 1 Closed Loop brands and the display shall be menu driven. The controller and its associated equipment shall be housed in an aluminum traffic signal controller cabinet Type IV or Type V, as designated on the plans or by the Signal Engineer and mounted on an enclosed wood stand with a three feet by four feet by 5 inches thick and a concrete pad in front of the cabinet door. The cabinet shall contain all harnesses, load switches, flasher, conflict monitor, detector harnesses and related components required to provide the sequence of operations on the plans or as directed by the Signal Engineer.

Traffic signal heads furnished for the installation shall be LED type with expanded view and have twelve inch lenses and be painted federal yellow with flat black faces and tunnel visors. Each approach to a signalized intersection must have a minimum of three (3) signal heads spaced a minimum of eight feet apart.

Pedestrian signal heads and push-button detectors, if required, will be paid separately. All vehicle detection, when required, as part of a span wire signal installation, will be paid separately. When possible, the Department will provide the detector amplifiers for the intersection from state stock. If necessary the Department shall authorize the installation of new amplifiers through a non routine work order.

The bottom of any span wire mounted signal head (or backplate if equipped) shall be no lower than 17-ft and the top of the signal head shall be no higher than 25-ft above the crown of the road, unless otherwise directed by the Signal Engineer.

All equipment furnished and installed shall become the property of the Illinois Department of Transportation.

Basis of Payment. This work shall be paid at the contract unit price each for SPAN WIRE TRAFFIC SIGNAL INSTALLATION, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer. Maintenance of the span wire traffic signal installation will be paid separately after the span wire signal is approved for operation by the Department.

TTM1 THERMOPLASTIC PAVEMENT MARKING LINE 24 INCH

Description. This item shall conform with sections 700 and 1000 of the Standard Specifications for Road and Bridge Construction as directed by the Signal Engineer.

Basis of Payment. This work will be paid at the contract unit price per foot of applied line for THERMOPLASTIC PAVEMENT MARKING LINE 24 inch.

TTP1 TRAFFIC SIGNAL POST, 10 FT TO 18 FT

Description. This item shall conform with sections 875 of the Standard Specifications for Road and Bridge Construction, the District 1 Traffic Signal Specifications and District 1 Traffic Signal Design Details except as revised herein.

When the new post is being installed on an existing foundation to replace an existing post, the removal of the existing post shall be included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for TRAFFIC SIGNAL POST, 10 FT TO 18 FT as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TTP2 - TTP3 REMOVE TRAFFIC SIGNAL POST AND REMOVE MAST ARM ASSEMBLY AND POLE

Description. These items consist of removing an existing traffic signal post or mast arm assembly and pole at a location shown on the plans or as directed by the Signal Engineer. The existing traffic signal post or existing mast arm assembly shall become the Contractor's property and the salvage value of the item shall be reflected in the unit price.

Basis of Payment. This work shall be paid at the contract unit price each for the pay items listed below and as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

- TTP2 Remove Traffic Signal Post
- TTP3 Remove Mast Arm Assembly and Pole

TTP4 RELOCATE OR INSTALL EXISTING SIGNAL POST

Description. This item shall conform with sections 875 of the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Specifications, except as revised herein. Installation of an existing signal post includes transportation from the Contractor storage facilities or from one intersection to the intersection where the post is to be installed. The existing signal post will be installed on an existing or new concrete foundation. This item shall include new anchor bolts, nuts, and washers, if required, as included in this item. New concrete foundation will be paid separately.

Basis of Payment. This work shall be paid at the contract unit price each for RELOCATE OR INSTALL EXISTING SIGNAL POST, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TVD1 VIDEO DETECTION SYSTEM, COMPLETE INTERSECTION

Description. This specification sets forth the minimum requirements for a system that monitors vehicles on a roadway via processing of video images and provides detector outputs to a traffic controller or similar device. This work shall consist of furnishing and installing an Autoscope or approved equal video vehicle detection system including all necessary hardware, cable and accessories as specified on the plans. An extension pole for mounting video cameras, when needed or directed by the engineer, will be included in this item.

The system shall consist of four (4) image sensors, a machine vision processor (MVP) and a video monitor.

The system shall be able to detect either approaching or receding vehicles in multiple traffic lanes. With a MVP capable of handling four image sensors, there shall be a minimum of 100 detection zones that can

be user-defined through interactive graphics by placing lines and/or boxes in an image or a VGA monitor. The user shall be able to redefine previously defined detection zones. The MVP shall calculate traffic parameters in real-time and provide local non-volatile data storage for later downloading and analysis.

1. FUNCTIONAL CAPABILITIES

1.1 REAL-TIME DETECTION

1.1.1 The MVP shall be capable of simultaneously processing information from up to four (4) CCTV video image sensors. The video image sensors may be, but are not required to be, synchronized or line locked. The video shall be digitized and analyzed at a rate of 30 times per second. A fifth image sensor input shall be provided on the four camera units as a surveillance video input to be switched as one of five live video sources.

1.1.2 A MVP capable of handling four image sensors shall be able to detect the presence of vehicles in a minimum of 100 detection zones within the combined field of view of the image sensors.

1.1.3 Different detector types shall be selectable via software. Detector types shall include count detectors, presence detectors, directional presence detectors, speed detectors, station detectors, input detectors, and detector logical functions. The speed detectors shall report vehicle speed and vehicle classification based on length. Three length categories shall be user-definable in software.

1.1.4 Once the MVP has been properly set up using a supervisor computer, it shall be possible to disconnect the supervisor computer. The MVP shall then detect vehicles as a stand-alone unit, calculate traffic parameters in real-time, and store traffic parameters in its own non-volatile memory.

1.1.5 The MVP shall provide the ability to compensate for minor camera movement. At a minimum, image stabilization detectors shall minimize the effects of image sensor movement. The MVP shall provide the capability to link the analog video image to the digital detector lay out as reference information for stabilization. Stabilization shall only be required if there is a motion problem observed by the user. One to five image stabilizers shall be able to be placed in the video image for each detector orientation.

1.2 LOCAL DATA STORAGE

1.2.1 The MVP shall count vehicles in real-time and compute the average of traffic parameters over user-defined time intervals (or time slices), as follows:

- a. Volume
Number of vehicles detected during the time interval.
- b. Occupancy
Lane occupancy measured in percent of time.
- c. Vehicle Classification
Number of automobiles, single unit trucks or tractor trailers, as defined by length.
- d. Flow Rate
Vehicles per hour per lane.
- e. Headway
Average time interval between vehicles.
- f. Speed
Time mean and space mean vehicle speed in M.P.H. or KM/H.
- g. Level of Service
Determined by user defined thresholds for average speed and flow rates.
- h. Space Occupancy
Sum of the vehicle lengths divided by average distance traveled during the time interval measured as percent.
- i. Density
Average flow divided by space mean speed expressed in vehicles/mile or vehicles/kilometer.

1.2.2 The duration of the time intervals (or time slices) shall be user-selectable as 10, 20, or 30 seconds, 1, 5, 10, 15, 30, or 60 minutes.

1.2.3 The time-interval data shall be retained in non-volatile EEPROM flash memory within the MVP for later transfer to a supervisor computer for analysis. The amount of memory shall be 1 MB or 2 MB as specified.

1.2.4 Retrieval of data stored in the non-volatile memory of the MVP shall be via a serial communications port. Data shall be transferred to a supervisor computer via modem and dial-up telephone connection provided in the traffic signal controller cabinet.

The Contractor shall coordinate with the telephone company and IDOT to install a standard voice-grade dial-up telephone line. Any charges by the telephone company to provide service will be paid by IDOT.

The controller cabinet shall contain a 33.6 kbps auto dial/auto answer modem.

The controller cabinet shall be equipped with surge suppressers and noise filters for the telephone line and the modem's power receptacle. These shall be three (3) stage variety containing avalanche diodes, metal-oxide varistors and gas tube arrestors.

1.3 OPERATION WITH SUPERVISOR ON-LINE

1.3.1 Once the detector configuration has been downloaded from a supervisor computer into the MVP, it shall be possible to operate the video detection system with the supervisor computer disconnected or on-line.

1.3.2 When a supervisor computer is on-line, it shall be possible to view vehicle detections in real-time as they occur on the supervisor's color VGA display.

1.3.3 It shall be possible to save the time-interval traffic data on a supervisor computer hard disk. This traffic data shall be that described in Section 1.2.1. It shall also be possible to save on hard disk the

complete time data or actuation data for each vehicle detection. The collected traffic and detection data shall be made available in readily-accessible Traffic Signal Controller format. The supervisor computer

software shall provide file management routines for efficiently filing, retrieving, and reporting of the collected traffic data.

1.3.4 It shall be possible to display the captured traffic data on the VGA screen of a supervisor computer in numeric format. The data displayed shall be for the last complete interval. Selection of the data to be displayed shall be by pull-down menus and shall be in the form of windows under the Windows NT (latest version) graphics operating environment.

1.3.5 The MVP shall include the capability to capture a video image (snapshot) from a selected image sensor input and transmit the image to a supervisor computer for display. The captured video image shall be compressed to minimize the time needed to transmit the image. An option shall be provided to allow continuing or suspending detection while the video image is being compressed and transmitted.

1.3.6 It shall be possible to capture and store as a file the video image currently being displayed at a supervisor computer.

1.3.7 Communications with a supervisor computer shall be via either a point-to-point or multi-drop communications architecture. An error-checking and retransmission protocol shall be used for file transfer operations.

2. MVP HARDWARE

2.1 MVP MOUNTING

The MVP shall be shelf or rack mountable as necessary per the application.

2.2 MVP ENVIRONMENTAL

The MVP shall be designed to operate reliably in the adverse environment found in the typical roadside traffic cabinet. It shall meet the environmental requirements set forth by the NEMA (National Electrical Manufacturers Association) TS1 and TS2 standards. Operating temperature shall be from -35 to +74 degrees C at 0% to 95% relative humidity, non-condensing.

2.3 MVP ELECTRICAL

2.3.1 The MVP shall be nodular in design and provide processing capability equivalent to the Intel 486SX microprocessor. The bus connections used to interconnect the nodules of the MVP shall be gold-plated DIN connectors.

2.3.2 The MVP shall be powered by 115/230 VAC, 50/60 Hz, single phase, and draw a maximum of 0.25 amps, or by 190-270 VAC, 50 Hz, single phase and draw 0.12 amps. The power supply shall automatically adapt to the input power level. The MVP shall include transient protection sufficient enough to meet the requirements set forth in the NEMA TS1 and TS2 standards. Power to the MVP shall be from the transient protected side of the AC power distribution system in the traffic control cabinet in which the MVP is installed.

2.3.3 Serial communications to a supervisor computer shall be through an RS-232/RS-422 serial port. The port shall be able to download traffic data stored in non-volatile memory as well as the real-time detection information needed to show detector actuations. A 9-pin "D" subminiature connector on the front of the MVP shall be used for serial communications.

2.3.4 The MVP shall be equipped with a NEMA TS1 detector interface with 32 detector outputs. Output level shall be compatible with the NEMA TS1 and NEMA TS2 standards. A 37-pin "D" subminiature connector on the front of the MVP shall be used for interfacing to these outputs.

2.3.5 The MVP shall be available with a NEMA TS2 Type 1 detector interface, where detector information is transmitted serially via an RS-485 data path. a 15-pin "D" subminiature connector meeting the requirements of the TS2 standard shall be used for the serial detector output.

2.3.6 NEMA red/green inputs for up to 16 phases shall be available as inputs to provide controller state information for detection and Extend/Delay timing functions. A 37-pin "D" subminiature connector on the front of the MVP shall be used for these inputs.

2.3.7 The MVP shall be equipped with up to four RS-170 black and white composite video inputs, so that signals from up to four image sensors can be processed in real-time. A fifth video input on four camera units shall be provided to allow connection of a local surveillance camera or other non-detection video source. The video from the auxiliary video input shall not be processed for detection. BNC connectors on the front of the MVP shall be used for all video inputs.

2.3.8 The MVP shall be equipped with a single RE-170/NTSC composite video output. These output shall be capable of being switched to correspond to any of the video inputs, as selected remotely via a supervisor computer or front panel switch. Multiple video outputs requiring external cable connections to create a combined single video output shall not be acceptable. A BNC connector on the front of the MVP shall be used for video output.

2.3.9 As an alternate to RS-170/NTSC video format, the MVP shall be available with video inputs and outputs in the CCIR black and white format.

2.3.10 The MVP software shall be stored in flash memory within the MVP. This software shall be capable of being updated without the removal of modules or memory devices.

2.3.11 The MVP software shall include diagnostic software to allow testing the MVP functions. This shall include the capability to set and clear individual detector outputs and display the status of inputs to enable setup and troubleshooting in the field.

3. IMAGE SENSOR

3.1 The video detection system shall use medium resolution, monochrome image sensors as the video source for real-time vehicle detection. As a minimum, each image sensor shall provide the following capabilities:

- a) Images shall be produced with a CCD sensing element with horizontal resolution of at least 500 lines and vertical resolution of at least 350 lines. Images shall be output:
 - 1) As a video signal conforming to RS170, RS 170A, or NTSC specifications.
 - 2) As a video signal conforming to CCIR or PAL specifications.
- b) Useable video and resolvable features in the video image shall be produced when those features have luminance levels as low as 0.1 lux at night.
- c) Useable video and resolvable features in the video image shall be produced when those features have luminance levels as high as 10,000 lux during the day.
- d) Useable video and resolvable features in the video image shall be produced when the ratio of the luminances of the resolved features in any single video frame is 300:1.
- e) Automatic gain, automatic iris, and absolute black reference controls shall be furnished:
 - 1) Automatic iris shall operate in a damped manner with a time constant of 0.25 seconds or longer.
 - 2) Automatic gain shall operate in a damped manner with a time constant of one second, and automatic gain shall not be applied to the video signal until the lens aperture is fully opened by the automatic iris control.
 - 3) Automatic gain, automatic iris, and sensitivity shall be factory adjusted and/or modified as required for proper performance with the video detection system.
 - 4) The black level shall be adjusted to 0 IRE units.
 - 5) The iris video level shall be adjusted so that a no-contrast image has 50 IRE units of video.
 - 6) The lens ALC shall be adjusted to average.
- f) An optical filter and appropriate electronic circuitry shall be included in the image sensor to suppress "blooming" effects at night.
- g) It is preferred that the image sensor video signal be crystal synchronized. Line lock synchronization, however, is acceptable.
- h) Gamma for the image sensor shall be preset at the factory to a value of 1.0.

3.2 The image sensor shall be equipped with an auto-iris lens with fixed focal length to suite the site. The maximum aperture of the lens shall be prefocused at infinity at the factory, shall not be smaller than f1.8 and the minimum aperture of the lens shall not be larger than f300.

3.3 The image sensor and lens assembly shall be housed in an environmental enclosure that provides the following capabilities:

- a) The enclosure shall be waterproof and dust-tight to NEMA-4 specifications, and shall be pressurized with an inert gas to 5 ± 1 psi.
- b) The enclosure shall allow the image sensor to operate satisfactorily over an ambient temperature range from -34 degrees C to +60 degrees C while exposed to precipitation as well as direct sunlight.
- c) The enclosure shall allow the image sensor horizon to be rotated in the field during installation.
- d) The enclosure shall include a provision at the rear of the enclosure for connection of power and video signal cables fabricated at the factory. Input power to the environmental enclosure shall be 115 VAC 60 Hertz, with 240 VAC 50 Hertz as an option.
- e) A heater shall be at the front of the enclosure to prevent the formation of ice and condensation in cold weather, as well as to assure proper operation of the lens' iris mechanism. The heater shall not interfere with the operation of the image sensor electronics, and it shall not cause interference with the video signal.
- f) The enclosure shall be light-colored and shall include a sun shield to minimize solar heating. The front edge of the sunshield shall protrude beyond the front edge of the environmental enclosure and shall include a provision to divert water flow to the sides of the sunshield. The amount of overhang of the sunshield shall be adjustable to prevent direct sunlight from entering the lens.
- g) The total weight of the image sensor in the environmental enclosure with sunshield shall be less than 2.3 kg or 5 pounds.
- h) When operating in the environmental enclosure with power and video signal cables connected, the image sensor shall meet FCC class B requirements for electromagnetic interference emissions.

3.4 The video output of the image sensor shall be isolated from earth ground. All video connections from the image sensor to the video interface panel shall also be isolated from earth ground. The video output stage of the image sensor shall include transient protection to prevent damage to the image sensor due to voltage transients occurring on the coaxial cable leading from the image sensor to the MVP.

3.5 Connections for both video and power shall be made to the image sensor using a single 18-pin circular metal shell connector (Bendix PT07C-14-18P or equivalent). The mating cable shall use a right angle shell and shall be available in lengths of 5, 10, 30, and 60 feet to accommodate various installations.

3.6 A galvanized steel junction box shall be provided for each image sensor and shall be mounted on the combination traffic signal pole at the location and elevation as specified in the plans. The junction box shall contain a terminal block for terminating power to the image sensor and connection points for coaxial cables from the image sensor and from the MVP. Nominal dimensions shall be 8.25" x 6" x 4.25" (HxWxD). The total weight of the junction box shall be less than 2.3 KG (5 pounds).

3.7 A video interface panel shall be available for installation inside of the traffic signal controller cabinet. The panel shall provide coaxial cable and image sensor AC power connection points. An Edco CX06-BNCY or approved equal transient suppresser shall be included for each image sensor. The shield side of the coaxial cable connection at the transient suppresser shall be connected to earth ground via the transient suppresser. The image sensor AC power shall be connected to the transient protected side of the AC power distribution system in the traffic signal controller cabinet in which the MVP is installed.

Power shall be provided to the image sensor via a 3/C No. 14 electric cable in accordance with the District 1 traffic signal specifications.

If the coaxial cable used to connect the video signal from the image sensor to the MVP is to be routed through a conduit containing AC power cables, the AC power cables shall use twisted wires meeting, at a minimum, IMSA 19-1 or 20-1 specifications. If unbundled AC power cables are routed with the coaxial cable, a video isolation amplifier shall be installed in place of the video interface panel. The isolation amplifier shall buffer the video signal and provide transient suppression. The isolation amplifier shall have a minimum common mode rejection ratio at 60 Hz of 100 dB.

3.8 The image sensor shall be connected to the MVP such that the video signal originating from the image sensor is not attenuated more than three (3) dB when measured at the MVP. The connection between the image sensor and the MVP shall be coaxial cable. The coaxial cable used shall be a low loss 75 ohm precision video cable (RG-59U) suited for outdoor installation, such as Belden 8281, West Penn P806, or approved equal.

4. VIDEO MONITOR

A video monitor with a minimum display of 9 inches shall be provided in the traffic signal cabinet. All necessary connections shall be provided to power and to the video outputs on the MVP. The video Pay

monitor shall be easily powered on and off as necessary for inspection of proper placement of detectors. The monitor shall display a single field of view from one image sensor at a time with all detectors for the direction overlaid on the image. The video input to the monitor shall be simply switched from one image sensor to another for routine inspection of all detection zones.

5. VEHICLE DETECTION

5.1 DETECTION ZONE PLACEMENT

The video detection system shall provide flexible detection zone placement anywhere and at any orientation within the combined field of view of the image sensors. Preferred presence detector configurations shall be lines placed across lanes of traffic or lines placed in-line with lanes of traffic. A single detector line shall be able to replace one or more conventional detector loops connected in series. Detection zones shall be able to be overlapped. In addition, detection zones shall have the capability of implementing logical functions including AND, OR, NAND, N of M and delay/extend timing.

5.2 DETECTION ZONE PROGRAMMING

5.2.1 Placement of detection zones shall be by means of a supervisor computer operating the Microsoft Windows graphics environment and a mouse. The VGA monitor shall show images of the detection zones superimposed on the video image of traffic.

5.2.2 The detection zones shall be created by using the mouse to draw detection lines on a supervisor computer's VGA monitor. The detection zones shall be capable of being sized, shaped and overlapped to provide optimal road coverage and detection. It shall be possible to save the detector configurations on disk, to download detector configurations to the MVP, and to retrieve the detector configuration that is currently running in the MVP.

5.2.3 It shall be possible to use a supervisor computer's mouse to edit previously defined detector configurations so as to fine-tune the detection zone placement size and shape. Once a detection configuration has been created. The supervisor computer system shall provide a graphic display of the new configuration on its own VGA screen.

5.2.4 When a vehicle is within a detection zone, the detection zone shall change in color or intensity on the VGA monitor thereby verifying proper operation of the detection system. Color changes shall also be used to indicate detection delay and extension timing.

5.3 OPTIMAL DETECTION

The image sensor shall be able to view both approaching or departing traffic. A single image sensor, placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road, shall be able to monitor six (6) to eight (8) traffic lanes simultaneously.

5.4 DETECTION PERFORMANCE

Using an image sensor, as defined in Section 5.0, and in the absence of occlusion, the system shall be able to count vehicles with less than four (4) percent error under normal conditions (day and night) and less than seven (7) percent error under artifact conditions (such as caused by shadows, fog, rain, snow).

The volume count error shall be for the entire roadway and shall be compiled over time intervals which contain a minimum of 100 vehicles to ensure statistical significance.

6. INSTALLATION

The supplier of the video detection system shall supervise the installation and testing of the video detection system. A factory certified representative from the supplier shall be on-site during installation.

7. WARRANTY, MAINTENANCE, AND SUPPORT

7.1 The video detection system shall be warranted by its supplier for a minimum of two (2) years.

7.2 Ongoing software supported by the supplier shall include updates of the MVP and supervisor software. These updates shall be provided free of charge during the warranty period.

7.3 The supplier shall maintain a program for technical support and software updates following expiration of the warranty period. This program shall be made available to the contracting agency in the form of a separate agreement for continuing support.

Basis of Payment. This work shall be paid at the contract unit price each to VIDEO DETECTION SYSTEM, COMPLETE INTERSECTION, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TVD2 VIDEO DETECTION SYSTEM, SINGLE CAMERA/PROCESSOR

Description. This item shall conform with the specification for Video Detection System (Complete Intersection) except as revised herein.

This work shall consist of furnishing and installing an Autoscope Solo or approved equal Video Detection System including all necessary hardware, cable and accessories as specified on the plans. An extension pole for mounting video cameras, when needed or directed by the engineer, will be included in this item.

The system shall consist of one Image Sensor and Machine Vision Processor (MVP) integrated into one compact unit. Rather than an MVP located in the traffic signal control cabinet, a Mini Hub shall be provided which will act as a interface between the image sensor/MVP and the traffic controller. The Mini Hub shall be shelf mount or it shall fit a standard detector rack depending on the application.

Similarly, as with the Video Detection System (Complete Intersection), a phone modem, phone line interface and video monitor shall be provided.

The image sensor/MVP shall provide 32 detection zones for the one field of view.

The image sensor/MVP shall utilize a six pair twisted shielded cable for power and video connections from the traffic signal cabinet to the image sensor. The cable shall be in accordance with the recommendation of the manufacturer of the Video Detection System. All necessary cables, connections and hardware shall be included in this item Video Detection System (Single Camera/Processor).

Basis of Payment. This work shall be paid at the contract unit price each for VIDEO DETECTION SYSTEM, SINGLE CAMERA/PROCESSOR VIDEO DETECTION, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TWD1 WIRELESS DETECTION SYSTEM, COMPLETE INTERSECTION

Description. This specification sets forth the minimum requirements for a wireless vehicle detection system that uses pavement-mounted magnetic sensors to detect the presence and movement of vehicles. This work shall consist of furnishing and installing a Sensys or approved equal wireless vehicle detection system including all necessary hardware, cable and accessories as shown on the plans and required to provide a fully operational system.

The system shall consist of a minimum of thirty (30) flush mounting pavement detector sensors, two (2) access points, two (2) repeaters and associated contact closure cards. The system shall be able to detect either approaching or receding vehicles in multiple traffic lanes. Extension poles for mounting wireless access points and repeaters shall meet the requirements of specification LP02 and be included in this item.

General:

The Detector Sensing System shall deploy a design that supports a minimum of eight sensor units being controlled by a radio repeater and a design that incorporates repeaters and a single receiver that supports a cumulative sum of eighty (80) separate detector sensors concurrently at any traffic signalized intersection. The design shall structure data transmissions in a manner as to be non-interfering with other sensors installed. This design shall include a non-interference technique that allows radio link from the detector sensor to the repeater/receiver and a radio link from each repeater to the receiver base at the traffic controller. Repeater devices shall deploy a battery operation or be provided with a battery with solar recharging installation. Batteries shall be rated for a minimum of two (2) years. Each repeater device or receiver device shall be capable of receiving up to eight (8) embedded detector sensors at a range of up to 150 feet from the repeater to the embedded detector sensor.

Epoxy fill for the roadway based on the pavement surface where the detectors are being installed with appropriate temperature ratings shall be applied.

Detector cards for traffic control detector rack positions shall be furnished. Each detector card shall be a four channel device and be capable of providing detector ground true input to the traffic controller as well as linking the detector data to a remote Ethernet port for remote monitoring, concurrently. Traffic controller detector sensor card units shall be compatible with TS-1 terminal facility terminations, unless otherwise specified on the Plans. The detector cards and Expansion Modules shall provide one detector input to the traffic controller for each detector sensor installed. Modification to the existing detector racks to accommodate the new detector may be necessary.

Repeater sites are required for all embedded sensors installed in excess of 150 feet from a receiver or repeater. An additional repeater for any repeater is required for distances greater than 900 feet from a repeater or receiver and/or does not provide sufficient radio propagation to properly support a radio link – repeater to repeater or repeater to receiver, which could occur with non-line of sight locations.

A factory representative is required at turn-on to support the radio installations and to implement the radio and device programming.

Detector Sensors:

The flush mounting pavement sensors shall be of the magnetic field (magnetometer) sensing technology capable of detecting and reporting volume count, speed, occupancy and headway, as a minimum. The

sensor section of the detector shall be embedded in the roadway pavement and shall utilize a radio transmitter link for the detector to a receiver radio being provided to the traffic controller and/or central monitoring server. The detector sensor embedded in the pavement shall not exceed a four (4) inch diameter and a depth of two (2) inches and shall be installed in a four (4) inch diameter, two and a half (2.5) inch deep cored hole in the pavement, centered in the travel lane. Detector sensors, embedded at a distance greater than one-hundred and fifty (150) feet from the receiver unit installed at the traffic controller cabinet, shall have a repeater installed to relay the sensor data to the receiver. The embedded detector sensor shall be battery operated with a battery design rated for ten (10) year life in this application.

Each detector sensor unit shall self-calibrate and self-configure their electronics for proper detection application. Each sensor unit shall be provided with flash memory upgrade capability to allow upgraded operation or safety enhancements to be "flashed" into local memory without removing the device for the pavement.

Radio Transceivers:

Radio transceivers shall utilize devices that are compliant with IEEE 802.15.4 standards and are able to operate on any of the allocated 16 channels of the 2.4 to 2.48 GHz spectrum. The factory support shall include the programming of the embedded sensor time slots and shall provide a written copy of the final design to the City Traffic Engineer plus one copy for the traffic controller cabinet. One software set of device programming (GUI), if other than standard WEB Browser via SNMP protocol, shall be provided for each intersection where devices are installed. The factory representative shall certify proper installation of the devices, the radio links, device settings and the traffic controller detector assignments. The factory representative shall provide an on-site computer and shall link to the Access Box for all programming. The GUI software shall provide real time management and monitoring of the Detector Sensing System as well as the Event Processing Software. One copy of the Event Processing Software shall be provided.

Basis of Payment. This work shall be paid at the contract unit price each to WIRELESS DETECTION SYSTEM, COMPLETE INTERSECTION, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TWD2 WIRELESS DETECTION SYSTEM, SINGLE APPROACH

Description. This item shall conform with the specification for Wireless Detection System (Complete Intersection) except as revised herein.

The system shall consist of a minimum of twelve (12) flush mounting pavement detector sensors, one (1) access point, one (1) repeater and associated contact closure cards for a single intersection approach with multiple lanes.

Basis of Payment. This work shall be paid at the contract unit price each for WIRELESS DETECTION SYSTEM, SINGLE APPROACH, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TWI1 WIRELESS INTERCONNECT SYSTEM

Description. The radio interconnect system shall be compatible with Eagle or Econolite controller closed loop systems. This item shall include all materials, labor and testing to provide the completely operational closed loop system between two (2) intersections as shown on the plans. The radio interconnect system shall include the following components:

- a. Rack or Shelf Mounted RS-232 Frequency Hopping Spread Spectrum (FHSS) Radio
- b. Software for Radio Configuration (Configure Frequency and Hopping Patterns)
- c. Antennas (Omni Directional or Yagi Directional)
- d. Antenna Cables, LMR400, Low Loss. Max. 100-ft from controller cabinet to antenna
- e. Brackets, Mounting Hardware, and Accessories Required for Installation
- f. RS232 Data Cable for Connection from the radio to the local or master controller
- g. All other components required for a fully functional radio interconnect system

All controller cabinet modifications and other modifications to existing equipment that are required for the installation of the radio interconnect system components shall be included in this item.

The radio interconnect system may operate at 900Mhz (902-928) or 2.4 Ghz depending on the results of a site survey. The telemetry shall have an acceptable rate of transmission errors, time outs, etc. comparable to that of a hardwire system.

The proposed master controller and telemetry module shall be configured for use with the radio interconnect at a minimum rate of 9600 baud.

The radio interconnect system shall include all other components required for a complete and fully functional telemetry system and shall be installed in accordance to the manufacturers recommendations.

The following radio equipment is currently approved for use in Region One/District One: Encon Model 5100 and Intuicom Communicator II.

Basis of Payment. This work shall be paid at the contract unit price each for WIRELESS INTERCONNECT SYSTEM, as described above, which price shall be payment in full for all work as described herein and as directed by the Signal Engineer.

TRAFFIC SIGNAL SPECIFICATIONS

Effective: May 22, 2002

Revised: June 18, 2008

These Traffic Signal Special Provisions and the "District One Standard Traffic Signal Design Details" supplement the requirements of the State of Illinois "Standard Specifications for Road and Bridge Construction." The intent of these Special Provisions is to prescribe the materials and construction methods commonly used for traffic signal installations. All material furnished shall be new. The locations and the details of all installations shall be as indicated on the Plans or as directed by the Engineer. The work to be done under this contract consists of furnishing and installing all traffic signal work as specified in the Plans and as specified herein in a manner acceptable and approved by the Engineer.

SECTION 720 SIGNING

MAST ARM SIGN PANELS

Add the following to Section 720.02 of the Standard Specifications:

Signs attached to poles or posts (such as mast arm signs) shall have mounting brackets and sign channels which are equal to and completely interchangeable with those used by the District Sign Shops. Signfix Aluminum Channel Framing System is currently recommended, but other brands of mounting hardware are acceptable based upon the Department's approval.

DIVISION 800 ELECTRICAL

INSPECTION OF ELECTRICAL SYSTEMS

Add the following to Article 801.10 of the Standard Specifications:

All cabinets including temporary traffic signal cabinets shall be assembled by an approved equipment supplier in District One. The Department reserves the right to request any controller and cabinet to be tested at the equipment supplier facilities prior to field installation, at no extra cost to this contract. All railroad interconnected (including temporary railroad interconnect) controllers and cabinets shall be new, built, tested and approved by the controller equipment vendor, in the vendor's District One facility, prior to field installation. The vendor shall provide the technical equipment and assistance as required by the Engineer to fully test this equipment.

DAMAGE TO TRAFFIC SIGNAL SYSTEM

Add the following to Article 801.12(b) of the Standard Specifications to read:

Any damaged equipment or equipment not operating properly from any cause whatsoever shall be repaired with new equipment provided by the Contractor at no additional cost to the Contract and or owner of the traffic signal system, all as approved by the Engineer. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted. Cable splices outside the controller cabinet shall not be allowed.

RESTORATION OF WORK AREA

Add to Section 801 of the Standard Specifications:

Restoration of the traffic signal work area shall be included in the related pay items such as foundation, conduit, handhole, trench and backfill, etc. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be replaced in kind. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded. Restoration of the work area shall be included in the contract without any extra compensation allowed to the Contractor.

SUBMITTALS

Revise Article 801.05 of the Standard Specifications to read:

The Contractor shall provide:

- a. All material approval requests shall be submitted at the preconstruction meeting, including major traffic signal items listed in the table in Article 801.05.
- b. All material or equipment which are similar or identical shall be the product of the same manufacturer, unless necessary for system continuity. Traffic signal materials and equipment shall bear the U.L. label whenever such labeling is available.
- c. Seven (7) copies of a letter from the Traffic Signal Contractor on company letterhead listing the contract number or permit number, project location/limits, pay item description, pay code number, manufacturer's name and model numbers of the proposed equipment and stating that the proposed equipment meets all contract requirements. The letter will be reviewed by the Traffic Design Engineer to determine whether the equipment to be used is approvable.
- d. Seven (7) copies of shop drawings for mast arm poles and assemblies, including combination mast arm poles, are required. A minimum of two (2) copies of all other material catalog cuts are required. Submittals for equipment and materials shall be complete. Partial or incomplete submittals will be returned without review.
- e. Certain non-standard mast arm poles and assemblies will require additional review from IDOT's Central Office. Examples include ornamental/decorative and non-standard length mast arm pole assemblies. The Contractor shall account for the additional review time in his schedule.
- f. The contract number or permit number, project location/limits and corresponding pay code number must be on each sheet of the letter, material catalog cuts and mast arm poles and assemblies drawings.
- g. Where certifications and/or warranties are specified, the information submitted for approval shall include certifications and warranties. Certifications involving inspections, and/or tests of material shall be complete with all test data, dates, and times.
- h. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as 'Approved', 'Approved-As-Noted', 'Disapproved', or 'Information Only'. Since the Engineer's review is for conformance with the design concept only, it is the Contractor's responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Department's approval thereof. The Contractor must still be in full compliance with contract and specification requirements.
- i. All submitted items reviewed and marked 'APPROVED AS NOTED', or 'DISAPPROVED' are to be resubmitted in their entirety, unless otherwise indicated within the submittal comments, with a disposition of previous comments to verify contract compliance at no additional cost to the contract.
- j. Exceptions, Deviations and Substitutions. In general, exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed

substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

MAINTENANCE AND RESPONSIBILITY

Revise Article 801.11 of the Standard Specifications to read:

- a) Existing traffic signal installations and/or any electrical facilities at all or various locations may be altered or reconstructed totally or partially as part of the work on this Contract. The Contractor is hereby advised that all traffic control equipment, presently installed at these locations, may be the property of the State of Illinois, Department of Transportation, Division of Highways, County, Private Developer, or the Municipality in which they are located. Once the Contractor has begun any work on any portion of the project, all traffic signals within the limits of this contract or those which have the item "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," shall become the full responsibility of the Contractor. The Contractor shall supply the engineer and the Department's Electrical Maintenance Contractor a 24-hour emergency contact name and telephone number.
- b) When the project has a pay item for "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," the Contractor must notify both the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, of their intent to begin any physical construction work on the Contract or any portion thereof. This notification must be made a minimum of seven (7) working days prior to the start of construction to allow sufficient time for inspection of the existing traffic signal installation(s) and transfer of maintenance to the Contractor. If work is started prior to an inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection. The Contractor will become responsible for repairing or replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic signal. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted.
- c) Contracts such as pavement grinding or patching which result in the destruction of traffic signal loops do not require maintenance transfer, but require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection. See additional requirements in these specifications under Inductive Loop Detector.
- d) The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most essential down time. Any shutdown of the traffic signal installation, which exceeds fifteen (15) minutes, must have prior approval of the Engineer. Approval to shutdown the traffic signal installation will only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns shall not be allowed during inclement weather or holiday periods.
- e) The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Department, the Department's Electrical Maintenance Contractor or the public, shall be investigated and repairs begun within one hour. Failure to provide this service will result in liquidated damages of \$500 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of \$500

per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The District's Electrical Maintenance Contractor may inspect any signaling device on the Department's highway system at any time without notification.

TRAFFIC SIGNAL INSPECTION (TURN-ON)

Revise Article 801.15(b) of the Standard Specifications to read:

It is the intent to have all electric work completed and equipment field tested by the vendor prior to the Department's "turn-on" field inspection. If in the event the Engineer determines work is not complete and the inspection will require more than two (2) hours to complete, the inspection shall be canceled and the Contractor will be required to reschedule at another date. The maintenance of the traffic signals will not be accepted until all punch list work is corrected and re-inspected.

When the road is open to traffic, except as otherwise provided in Section 850 of the Standard Specifications, the Contractor may request a turn-on and inspection of the completed traffic signal installation at each separate location. This request must be made to the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 a minimum of seven (7) working days prior to the time of the requested inspection. The Department will not grant a field inspection until notification is provided from the Contractor that the equipment has been field tested and the intersection is operating according to Contract requirements. The Department's facsimile number is (847) 705-4089. The Contractor must invite local fire department personnel to the turn-on when Emergency Vehicle Preemption (EVP) is included in the project. The Contractor must notify the SCAT Consultant of the turn-on schedule, as well as stage changes and phase changes during construction.

The Contractor must have all traffic signal work completed and the electrical service installation connected by the utility company prior to requesting an inspection and turn-on of the traffic signal installation. The Contractor shall be responsible to provide a police officer to direct traffic at the time of testing.

The Contractor shall provide a representative from the control equipment vendor's office to attend the traffic signal inspection for both permanent and temporary traffic signal turn-ons. Upon demonstration that the signals are operating and all work is completed in accordance with the Contract and to the satisfaction of the Engineer, the Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each traffic signal installation will assume the maintenance upon successful completion of this inspection.

The District requires the following from the Contractor at traffic signal turn-ons.

1. One set of signal plans of record with field revisions marked in red ink.
2. Notification from the Contractor and the equipment vendor of satisfactory field testing.
3. A knowledgeable representative of the controller equipment supplier shall be required at the traffic signal turn-on. The representative shall be knowledgeable of the cabinet design and controller functions.
4. A copy of the approved material letter.
5. One (1) copy of the operation and service manuals of the signal controller and associated control equipment.
6. Five (5) copies 11" x 17" (280 mm X 430 mm) or 22" x 34" (560 mm x 860 mm) of the cabinet wiring diagrams.
7. The controller manufacturer shall supply a printed form, not to exceed 11" x 17" (280 mm X 430 mm) for recording the traffic signal controller's timings; backup timings; coordination splits, offsets, and cycles; TBC Time of Day, Week and Year Programs; Traffic Responsive Program, Detector Phase Assignment, Type and Detector Switching; and any other functions programmable from the keyboard. The form shall include a location, date, manufacturer's name, controller model and software version. The form shall be approved by the Engineer and a minimum of three (3) copies must be furnished at each turn-on. The

manufacturer must provide all programming information used within the controller at the time of turn-on.

Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal "turn on." If approved, traffic signal acceptance shall be verbal at the "turn on" inspection followed by written correspondence from the Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until Departmental acceptance is granted.

All equipment and/or parts to keep the traffic signal installation operating shall be furnished by the Contractor. No spare traffic signal equipment is available from the Department.

All punch list work shall be completed within two (2) weeks after the final inspection. The Contractor shall notify the Electrical Maintenance Contractor to inspect all punch list work. Failure to meet these time constraints shall result in liquidated damage charges of \$500 per month per incident.

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid prices, under which the subject materials and signal equipment are paid, and no additional compensation will be allowed. Materials and signal equipment not complying with the above requirements shall be subject to removal and disposal at the Contractor's expense.

LOCATING UNDERGROUND FACILITIES

Revise Section 803 to the Standard Specifications to read:

If this Contract requires the services of an Electrical Contractor, the Contractor shall be responsible at his/her own expense for locating existing IDOT electrical facilities prior to performing any work. If this Contract does not require the services of an Electrical Contractor, the Contractor may request one free locate for existing IDOT electrical facilities from the District One Electrical Maintenance Contractor prior to the start of any work. Additional requests may be at the expense of the Contractor. The location of underground traffic facilities does not relieve the Contractor of their responsibility to repair any facilities damaged during construction at their expense.

The exact location of all utilities shall be field verified by the Contractor before the installation of any components of the traffic signal system. For locations of utilities the local Counties or Municipalities may need to be contacted, in the City of Chicago contact D.I.G.G.E.R. at (312) 744-7000 and for all other locations contact J.U.L.I.E. at 1-800-892-0123.

ELECTRIC SERVICE INSTALLATION

Revise Section 805 of the Standard Specifications to read:

Description. This work shall consist of all materials and labor required to install, modify, or extend the electric service installation. All installations shall meet the requirements of the details in the "District One Standard Traffic Signal Design Details" and applicable portions of the Specifications.

General. The electric service installation shall be the electric service disconnecting means and it shall be identified as suitable for use as service equipment.

The electric utility contact information is noted on the plans and represents the current information at the time of contract preparation. The Contractor must request in writing for service and/or service modification within 10 days of contract award and must follow-up with the electric utility to assure all necessary documents and payment are received by the utility. The Contractor shall forward copies of all correspondence between the contractor and utility company. The service agreement and sketch shall be submitted for signature to the Traffic Program's engineer.

Materials

- a. General. The completed control panel shall be constructed in accordance with UL Std. 508A, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.
- b. Enclosures.
 1. Pole Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 4X, unfinished single door design, fabricated from minimum 0.080-inch (2.03 mm) thick Type 5052 H-32 aluminum. Seams shall be continuous welded and ground smooth. Stainless steel screws and clamps shall secure the cover and assure a watertight seal. The cover shall be removable by pulling the continuous stainless steel hinge pin. The cabinet shall have an oil-resistant gasket and a lock kit shall be provided with an internal O-ring in the locking mechanism assuring a watertight and dust-tight seal. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 14-inches (350 mm) high, 9-inches (225 mm) wide and 8-inches (200 mm) in depth is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.
 2. Ground Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 3R unfinished single door design with back panel. The cabinet shall be fabricated from Type 5052 H-32 aluminum with the frame and door 0.125-inch (3.175 mm) thick, the top 0.250-inch (6.350 mm) thick and the bottom 0.500-inch (12.70 mm) thick. Seams shall be continuous welded and ground smooth. The door and door opening shall be double flanged. The door shall be approximately 80% of the front surface, with a full length tamperproof stainless steel .075-inch (1.91 mm) thick hinge bolted to the cabinet with stainless steel carriage bolts and nylocks nuts. The locking mechanism shall be slam-latch type with a keyhole cover. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 40-inches (1000 mm) high, 16-inches (400 mm) wide and 15-inches (375 mm) in depth is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.
- c. Surge Protector. Overvoltage protection, with LED indicator, shall be provided for the 120 volt load circuit by the means MOV and thermal fusing technology. The response time shall be <5n seconds and operate within a range of -40C to +85C. The surge protector shall be UL 1449 Listed.

- d. **Circuit Breakers.** Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type circuit breakers with trip free indicating handles. 120 volt circuit breakers shall have an interrupting rating of not less than 65,000 rms symmetrical amperes. Unless otherwise indicated, the main disconnect circuit breaker for the traffic signal controller shall be rated 60 amperes, 120 V and the auxiliary circuit breakers shall be rated 10 amperes, 120 V.
- e. **Fuses, Fuseholders and Power Indicating Light.** Fuses shall be small-dimensional cylindrical fuses of the dual element time-delay type. The fuses shall be rated for 600 V AC and shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated voltage. The power indicating light shall be LED type with a green colored lens and shall be energized when electric utility power is present.
- f. **Ground and Neutral Bus Bars.** A single copper ground and neutral bus bar, mounted on the equipment panel shall be provided. Ground and neutral conductors shall be separated on the bus bar. Compression lugs, plus 2 spare lugs, shall be sized to accommodate the cables with the heads of the connector screws painted green for ground connections and white for neutral connections.
- g. **Utility Services Connection.** The Contractor shall notify the Utility Company marketing representative a minimum of 30 working days prior to the anticipated date of hook-up. This 30 day advance notification will begin only after the Utility Company marketing representative has received service charge payments from the Contractor. Prior to contacting the Utility Company marketing representative for service connection, the service installation controller cabinet and cable must be installed for inspection by the Utility Company.
- h. **Ground Rod.** Ground rods shall be copper-clad steel, a minimum of 10 feet (3.0m) in length, and 3/4 inch (20mm) in diameter. Ground rod resistance measurements to ground shall be 25 ohms or less. If necessary additional rods shall be installed to meet resistance requirements at no additional cost to the contract.

Installation

- a. **General.** The Contractor shall confirm the orientation of the traffic service installation and its door side with the engineer, prior to installation. All conduit entrances into the service installation shall be sealed with a pliable waterproof material.
- b. **Pole Mounted.** Brackets designed for pole mounting shall be used. All mounting hardware shall be stainless steel. Mounting height shall be as noted on the plans or as directed by the Engineer.
- c. **Ground Mounted.** The service installation shall be mounted plumb and level on the foundation and fastened to the anchor bolts with hot-dipped galvanized or stainless steel nuts and washers. The space between the bottom of the enclosure and the top of the foundation shall be caulked at the base with silicone.

Basis of Payment. The service installation shall be paid for at the contract unit price each for SERVICE INSTALLATION of the type specified which shall be payment in full for furnishing and installing the service installation complete. The type A foundation which includes the ground rod shall be paid for separately. SERVICE INSTALLATION, POLE MOUNTED shall include the 3/4 inch (20mm) grounding conduit, ground rod, and pole mount assembly. Any charges by the utility companies shall be approved by the engineer and paid for as an addition to the contract according to Article 109.05 of the Standard Specifications.

GROUNDING OF TRAFFIC SIGNAL SYSTEMS

General. All traffic signal systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC. See IDOT District One Traffic Signal detail plan sheets for additional information.

The grounding electrode system shall include a ground rod installed with each traffic signal controller concrete foundation and all mast arm and post concrete foundations. An additional ground rod will be required at locations where measured resistance exceeds 25 ohms. Ground rods are included in the applicable foundation pay item and will not be paid for separately.

Testing shall be according to Article 801.13 (a) (4) and (5).

- a) The grounded conductor (neutral conductor) shall be white color coded. This conductor shall be bonded to the equipment grounding conductor only at the Electric Service Installation. All power cables shall include one neutral conductor of the same size.
- b) The equipment grounding conductor shall be green color coded. The following is in addition to Article 801.04 of the Standard Specifications.
 - 1) Equipment grounding conductors shall be bonded to the grounded conductor (neutral conductor) only at the Electric Service Installation. The equipment grounding conductor is paid for separately and shall be continuous. The Earth shall not be used as the equipment grounding conductor.
 - 2) Equipment grounding conductors shall be bonded, using a Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system, except where noted herein. Bonding shall be made with a splice and pigtail connection, using a sized compression type copper sleeve, sealant tape, and heat-shrinkable cap. A Listed electrical joint compound shall be applied to all conductors' terminations, connector threads and contact points.
 - 3) All metallic and non-metallic raceways containing traffic signal circuit runs shall have a continuous equipment grounding conductor, except raceways containing only detector loop lead-in circuits, circuits under 50 volts and/or fiber optic cable will not be required to include an equipment grounding conductor.
 4. Individual conductor splices in handholes shall be soldered and sealed with heat shrink. When necessary to maintain effective equipment grounding, a full cable heat shrink shall be provided over individual conductor heat shrinks.
- c) The grounding electrode conductor shall be similar to the equipment grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment grounding conductor and is bonded to ground rods via exothermic welding, listed pressure connectors, listed clamps or other approved listed means.

HANDHOLES

Add the following to Section 814 of the Standard Specifications:

All handholes shall be concrete, poured in place, with inside dimensions of 21-1/2 inches (549mm) minimum. Frames and lid openings shall match this dimension. The cover of the handhole frame shall be labeled "Traffic Signals" with legible raised letters.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (15.875mm) diameter stainless bolt cast into the frame. The covers shall have a stainless steel threaded stint extended from the eye hook assembly for the purpose of attaching the grounding conductor to the handhole cover.

The minimum wall thickness for heavy duty hand holes shall be 12 inches (300mm).

All conduits shall enter the handhole at a depth of 30 inches (760mm) except for the conduits for detector loops when the handhole is less than 5 feet (1.52 m) from the detector loop. All conduit ends should be sealed with a waterproof sealant to prevent the entrance of contaminants into the handhole.

Steel cable hooks shall be coated with hot-dipped galvanization in accordance with AASHTO Specification M111. Hooks shall be a minimum of 1/2 inch (12.7 mm) diameter with two 90 degree bends and extend into the handhole at least 6 inches (150 mm). Hooks shall be placed a minimum of 12 inches (300 mm) below the lid or lower if additional space is required.

FIBER OPTIC TRACER CABLE

The cable shall meet the requirements of Section 817 of the "Standard Specifications," except for the following:

Add the following to Article 817.03 of the Standard Specifications:

In order to trace the fiber optic cable after installation, the tracer cable shall be installed in the same conduit as the fiber optic cable in locations shown on the plans. The tracer cable shall be continuous, extended into the controller cabinet and terminated on a barrier type terminal strip mounted on the side wall of the controller cabinet. The barrier type terminal strip and tracer cable shall be clearly marked and identified. The tracer cable will be allowed to be spliced at the handholes only. All tracer cable splices shall be kept to a minimum and shall incorporate maximum lengths of cable supplied by the manufacturer. The tracer cable splice shall use a Western Union Splice soldered with resin core flux. All exposed surfaces of the solder shall be smooth. Splices shall be soldered using a soldering iron. Blow torches or other devices which oxidize copper cable shall not be allowed for soldering operations. The splice shall be covered with WCSMW 30/100 heat shrink tube, minimum length 4 inches (100 mm) and with a minimum 1 inch (25 mm) coverage over the XLP insulation, underwater grade.

Add the following to Article 817.05 of the Standard Specifications:

Basis of Payment. The tracer cable shall be paid for separately as ELECTRIC CABLE IN CONDUIT, TRACER, NO. 14 1C per foot (meter), which price shall include all associated labor and material for installation.

GROUNDING CABLE

The cable shall meet the requirements of Section 817 of the "Standard Specifications," except for the following:

Add to Article 817.02 (b) of the Standard Specifications:

Unless otherwise noted on the Plans, traffic signal grounding conductor shall be one conductor, #6 gauge copper, with a green color coded XLP jacket.

The traffic signal grounding conductor shall be bonded, using a Listed grounding connector (Burndy type KC/K2C, as applicable, or approved equal), to all proposed and existing traffic signal mast arm poles and traffic/pedestrian signal posts, including push button posts. The grounding conductor shall be bonded to all proposed and existing pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system and noted herein and detailed on the plans. Bonding to existing handhole frames and covers shall be paid for separately.

Add the following to Article 817.05 of the Standard Specifications:

Basis of Payment. Grounding cable shall be measured in place for payment in foot (meter). Payment shall be at the contract unit price for ELECTRIC CABLE IN CONDUIT, GROUNDING, NO. 6, 1C, which price includes all associated labor and material including grounding clamps, splicing, exothermic welds, grounding connectors, and other hardware.

RAILROAD INTERCONNECT CABLE

The cable shall meet the requirements of Section 817 of the "Standard Specifications," except for the following:

Add to Article 817.02 of the Standard Specifications:

The railroad interconnect cable shall be three conductor stranded #14 copper cable in a clear polyester binder, shielded with #36 AWG tinned copper braid with 85% coverage, and insulated with .016" polyethylene (black, blue, red). The jacket shall be black 0.045 PVC or polyethylene.

Add the following to Article 817.05 of the Standard Specifications:

Basis of Payment. This work shall be paid for at the contract unit price per foot (meter) for ELECTRIC CABLE IN CONDUIT, RAILROAD, NO. 14 3C, which price shall be payment in full for furnishing, installing, and making all electrical connections in the traffic signal controller cabinet. Connections in the railroad controller cabinet shall be performed by railroad personnel.

MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION

Revise Section 850 of the Standard Specifications to read:

The energy charges for the operation of the traffic signal installation shall be paid for by others. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the Contract or any portion thereof.

The Contractor shall have on staff electricians with IMSA Level II certification to provide signal maintenance.

This item shall include maintenance of all traffic signal equipment at the intersection, including emergency vehicle pre-emption equipment, master controllers, uninterruptible power supply (UPS and batteries), telephone service installations, communication cables and conduits to adjacent intersections.

The maintenance shall be according to District One revised Article 801.11 and the following contained herein.

The Contractor shall check all controllers every two (2) weeks, which will include visually inspecting all timing intervals, relays, detectors, and pre-emption equipment to ensure that they are functioning properly. This item includes, as routine maintenance, all portions of emergency vehicle pre-emption equipment. The Contractor shall maintain in stock at all times a sufficient amount of materials and equipment to provide effective temporary and permanent repairs.

The Contractor shall provide immediate corrective action when any part or parts of the system fail to function properly. Two far side heads facing each approach shall be considered the minimum acceptable signal operation pending permanent repairs. When repairs at a signalized intersection require that the controller be disconnected, and power is available, the Contractor shall place the traffic signal installation on flashing operation. The signals shall flash RED for all directions unless a different indication has been specified by the Engineer. The Contractor shall be required to place stop signs (R1-1-36) at each approach of the intersection as a temporary means of regulating traffic. The Contractor shall furnish and equip all their vehicles assigned to the maintenance of traffic signal installations with a sufficient number of stop signs as specified herein. The Contractor shall maintain a sufficient number of spare stop signs in stock at all times to replace stop signs which may be damaged or stolen.

The Contractor shall provide the Engineer with a 24 hour telephone number for the maintenance of the traffic signal installation and for emergency calls by the Engineer.

Traffic signal equipment which is lost or not returned to the Department for any reason shall be replaced with new equipment meeting the requirements of these Specifications.

The Contractor shall respond to all emergency calls from the Department or others within one hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the contract. The Contractor may institute action to recover damages from a responsible third party. If at any time the Contractor fails to perform all work as specified herein to keep the traffic signal installation in proper operating condition or if the Engineer cannot contact the Contractor's designated personnel, the Engineer shall have the State's Electrical Maintenance Contractor perform the maintenance work required. The State's Electrical Maintenance Contractor shall bill the Contractor for the total cost of the work. The Contractor shall pay this bill within thirty (30) days of the date of receipt of the invoice or the cost of such work will be deducted from the amount due the Contractor. The Contractor shall allow the Electrical Maintenance Contractor to make reviews of the Existing Traffic Signal Installation that has been transferred to the Contractor for Maintenance.

Basis of Payment. This work shall be paid for at the contract unit price each for MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.

TRAFFIC ACTUATED CONTROLLER

Add the following to Article 857.02 of the Standard Specifications:

Controllers shall be NEMA TS2 Type 1, Econolite ASC/3-1000 or Eagle/Siemens M52 unless specified otherwise on the plans or elsewhere on these specifications. Only controllers supplied by one of the District One approved closed loop equipment manufacturers will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer at the time of the approval. The traffic signal controller shall provide features to inhibit simultaneous display of a circular yellow ball and a yellow arrow display. Individual load switches shall be provided for each vehicle, pedestrian, and right turn over lap phase. The controller shall prevent phases from being skipped during program changes and after all preemption events.

MASTER CONTROLLER

Revise Articles 860.02 - Materials and 860.03 - Installation of the Standard Specifications to read:

Only controllers supplied by one of the District approved closed loop equipment manufacturers will be allowed. Only NEMA TS 2 Type 1 Eagle/Siemens and Econolite closed loop systems shall be supplied. The latest model and software version of master controller shall be supplied.

Functional requirements in addition to those in Section 863 of the Standard Specification include:

The system commands shall consist of, as a minimum, six (6) cycle lengths, five (5) offsets, three (3) splits, and four (4) special functions. The system commands shall also include commands for free or coordinated operation.

Traffic Responsive operation shall consist of the real time acquisition of system detector data, data validation, and the scaling of acquired volumes and occupancies in a deterministic fashion so as to cause the selection and implementation of the most suitable traffic plan.

Upon request by the Engineer, each master shall be delivered with up to three (3) complete sets of the latest edition of registered remote monitoring software with full manufacture's support. Each set shall consist of software on CD, DVD, or other suitable media approved by the Engineer, and a bound set of manuals containing loading and operating instruction. One copy of the software and support data shall be delivered to the Agency in charge of system operation, if other than IDOT. One of these two sets will be provided to the Agency Signal Maintenance Contractor for use in monitoring the system.

The approved manufacturer of equipment shall loan the District one master controller and two intersection controllers of the most recent models and the newest software version to be used for instructional purposes in addition to the equipment to be supplied for the Contract.

The Contractor shall arrange to install a standard voice-grade dial-up telephone line to the master controller. This shall be accomplished through the following process utilizing District One staff. This telephone line may be coupled with a DSL line and a phone filter to isolate the dial-up line. An E911 address is required.

The cabinet shall be provided with an Outdoor Network Interface for termination of the telephone service. It shall be mounted to the inside of the cabinet in a location suitable to provide access for termination of the telephone service at a later date.

Full duplex communication between the master and its local controllers is recommended, but at this time not required. The data rate shall be 1200 baud minimum and shall be capable of speeds to 38,400 or above as technology allows. The controller, when installed in an Ethernet topology, may operate non-serial communications.

The cabinet shall be equipped with a 9600 baud, auto dial/auto answer modem. It shall be a US robotics 56K baud rate or equal.

As soon as practical or within one week after the contract has been awarded, the Contractor shall contact (via phone) the Administrative Support Manager in the District One Business Services Section at (847) 705-4011 to request a phone line installation.

A follow-up fax transmittal to the Administrative Support Manager (847-705-4712) with all required information pertaining to the phone installation is required from the Contractor as soon as possible or within one week after the initial request has been made. A copy of this fax transmittal must also be faxed by the Contractor to the Traffic Signal Systems Engineer at (847) 705-4089. The required information to be supplied on the fax shall include (but not limited to): A street address for the new traffic signal controller (or nearby address); a nearby existing telephone number; what type of telephone service is needed; the name and number of the Contractor's employee for the telephone company to contact regarding site work and questions.

The usual time frame for the activation of the phone line is 4-6 weeks after the Business Services Section has received the Contractor supplied fax. It is, therefore, imperative that the phone line conduit and pull-string be installed by the Contractor in anticipation of this time frame. On jobs which include roadway widening in which the conduit cannot be installed until this widening is completed, the Contractor will be allowed to delay the phone line installation request to the Business Services Section until a point in time that is 4-6 weeks prior to the anticipated completion of the traffic signal work. The contractor shall provide the Administrative Support Manager with an expected installation date considering the 4-6 week processing time.

The telephone line shall be installed and activated one month before the system final inspection.

All costs associated with the telephone line installation and activation (not including the Contract specified conduit installation between the point of telephone service and the traffic signal controller cabinet) shall be paid for by the District One Business Services Section (i.e., this will be an IDOT phone number not a Contractor phone number).

FIBER OPTIC CABLE

Add the following to Articles 871.01, 872.02, 871.04, and 871.05 of the Standard Specifications:

This work shall consist of furnishing and installing Fiber Optical cable in conduit with all accessories and connectors according to Section 871 of the Standard Specifications. The cable shall be of the type, size, and the number of fiber specified.

The control cabinet distribution enclosure shall be CSC FTWO12KST-W/O 12 Port Fiber Wall Enclosure or an approved equivalent. The fiber optic cable shall provide six fibers per tube for the amount of fibers called for in the Fiber Optic Cable pay item in the Contract. A minimum of six multimode fibers from each cable shall be terminated with approved mechanical connectors at the distribution enclosure. Fibers not being used shall be labeled "spare." Fibers not attached to the distribution enclosure shall be capped and sealed. A minimum of 13.0 feet (4m) of extra cable length shall be provided for the controller cabinet. The controller cabinet extra cable length shall be stored as directed by the Engineer.

Fiber Optic cable may be gel filled or have an approved water blocking tape.

Basis of Payment. The work shall be paid for at the contract unit price for FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, MM12F SM12F, per foot (meter) for the cable in place, including distribution enclosure and all connectors.

CONCRETE FOUNDATIONS

Add the following to Article 878.03 of the Standard Specifications:

All anchor bolts shall be according to Article 1006.09, except all anchor bolts shall be hot dipped galvanized the full length of the anchor bolt including the hook.

Concrete Foundations, Type "A" for Traffic Signal Posts shall provide anchor bolts with the bolt pattern specified within the "District One Standard Traffic Signal Design Details." All Type "A" foundations shall be a minimum depth of 48 inches (1.22 m).

Concrete Foundations, Type "C" for Traffic Signal Cabinets with Uninterruptible Power Supply (UPS) cabinet installations shall be a minimum of 72 inches long and 31 inches wide. A concrete apron in front of the Type IV or V cabinet and UPS cabinet shall be included in this item. See District 1 Traffic Signal Detail sheet for additional construction requirements. Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "D" for Traffic Signal Cabinets shall be a minimum of 48 inches (1.22 m) long and 31 inches (790 mm) wide. All Type "D" foundations shall be a minimum depth of 48 inches (1.22 m). The concrete apron shall be 36 in. x 48 in. x 5 in. (910 mm X 1220 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "E" for Mast Arm and Combination Mast Arm Poles shall meet the requirements of the current State Standard 878001-06 (as of January 1, 2008).

No foundation is to be poured until the Resident Engineer gives his/her approval as to the depth of the foundation.

DETECTOR LOOP

Revise Section 886 of the Standard Specifications to read:

A minimum of seven (7) working days prior to the Contractor cutting loops, the Contractor shall have the proposed loop locations marked and contact the Area Traffic Signal Maintenance and Operations Engineer (847) 705-4424 to inspect and approve the layout. When preformed detector loops are installed, the Contractor shall have them inspected and approved prior to the pouring of the Portland cement concrete surface, using the same notification process as above.

Loop detectors shall be installed according to the requirements of the "District One Standard Traffic Signal Design Details." Saw-cuts (homeruns on preformed detector loops) from the loop to the edge of pavement shall be made perpendicular to the edge of pavement when possible in order to minimize the length of the saw-cut (homerun on preformed detector loops) unless directed otherwise by the Engineer or as shown on the plan.

The detector loop cable insulation shall be labeled with the cable specifications.

Each loop detector lead-in wire shall be labeled in the handhole using a Panduit 250W175C water proof tag, or an approved equal, secured to each wire with nylon ties.

Resistance to ground shall be a minimum of 100 mega-ohms under any conditions of weather or moisture. Inductance shall be more than 50 and less than 700 microhenries. Quality readings shall be more than 5.

- (a) Type I. All loops installed in new asphalt pavement shall be installed in the binder course and not in the surface course. The edge of pavement, curb and handhole shall be cut with a 1/4 inch (6.3 mm) deep x 4 inches (100 mm) saw cut to mark location of each loop lead-in.

Loop sealant shall be a two-component thixotropic chemically cured polyurethane either Chemque Q-Seal 295, Percol Elastic Cement A/C Grade or an approved equal. The sealant shall be installed 1/8 inch (3 mm) below the pavement surface, if installed above the surface the overlap shall be removed immediately.

Detector loop measurements shall include the saw cut and the length of the loop lead-in to the edge of pavement. The lead-in wire, including all necessary connections for proper operations, from the edge of pavement to the handhole, shall be included in the price of the detector loop. Unit duct, trench and backfill, and drilling of pavement or handholes shall be included in detector loop quantities.

- (b) Preformed. This work shall consist of furnishing and installing a rubberized heat resistant preformed traffic signal loop in accordance with the Standard Specifications, except for the following:

Preformed detector loops shall be installed in new pavement constructed of Portland cement concrete using mounting chairs or tied to re-bar or the preformed detector loops may be placed in the sub-base. Loop lead-ins shall be extended to a temporary enclosure near the proposed handhole location with ends capped and sealed against moisture and other contaminants.

Handholes shall be placed next to the shoulder or back of curb when preformed detector loops enter the handhole. Non-metallic coilable duct, included in this pay item, shall be used to protect the preformed lead-ins from back of curb to the handhole.

Preformed detector loops shall be factory assembled. Homeruns and interconnects shall be pre-wired and shall be an integral part of the loop assembly. The loop configurations and homerun lengths shall be assembled for the specific application. The loop and homerun shall be constructed using 11/16 inch (17.2 mm) outside diameter (minimum), 3/8 inch (9.5 mm) inside diameter (minimum) Class A oil resistant synthetic cord reinforced hydraulic hose with 250 psi (1,720 kPa) internal pressure rating. Hose for the loop and homerun assembly shall be one continuous piece. No joints or splices shall be allowed in the hose except where necessary to connect homeruns or interconnects to the loops. This will provide maximum wire protection and loop system strength. Hose tee connections shall be heavy duty high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking. The wire used shall be #16 THWN stranded copper. The number of turns in the loop shall be application specific. Homerun wire pairs shall be twisted a minimum of four turns per foot. No wire splices will be allowed in the preformed loop assembly. The loop and homeruns shall be filled and sealed with a flexible sealant to insure complete moisture blockage and further protect the wire. The preformed loops shall be constructed to allow a minimum of 6.5 feet of extra cable in the handhole.

Basis of Payment. This work shall be paid for at the contract unit price per foot (meter) for DETECTOR LOOP, TYPE I or PREFORMED DETECTOR LOOP as specified in the plans, which price shall be payment in full for furnishing and installing the detector loop and all related connections for proper operation.

EMERGENCY VEHICLE PRIORITY SYSTEM

Revise Section 887 of the Standard Specifications to read:

It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle pre-emption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency.

All new installations shall be equipped with Confirmation Beacons as shown on the "District One Standard Traffic Signal Design Details." The Confirmation Beacon shall consist of a 6 watt Par 38 LED flood lamp with a 30 degree light spread, maximum 6 watt energy consumption at 120V, and a 2,000 hour warranty for each direction of pre-emption. The lamp shall have an adjustable mount with a weatherproof enclosure for cable splicing. All hardware shall be cast aluminum or stainless steel. Holes drilled into signal poles, mast arms, or posts shall require rubber grommets. In order to maintain uniformity between communities, the confirmation beacons shall indicate when the control equipment receives the pre-emption signal. The pre-emption movement shall be signalized by a flashing indication at the rate specified by Section 4D-11 of the "Manual on Uniform Traffic Control Devices." The stopped pre-empted movements shall be signalized by a continuous indication.

All light operated systems shall include security and transit preemption software and operate at a uniform rate of 14.035 Hz \pm 0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District.

Basis of Payment. The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be included in the cost of the Light Detector. The preemption detector amplifier shall be paid for on a basis of (1) one each per intersection controller and shall provide operation for all movements required in the pre-emption phase sequence.

RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM

Description. This work shall consist of re-optimizing a closed loop traffic signal system according to the following Levels of work.

LEVEL I applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system. The purpose of this work is to integrate the improvements to the subject intersection into the signal system while minimizing the impacts to the existing system operation. This type of work would be commonly associated with the addition of signal phases, pedestrian phases, or improvements that do not affect the capacity at an intersection.

LEVEL II applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system and detailed analysis of the intersection operation is desired by the engineer, or when a new signalized or existing signalized intersection is being added to an existing system, but optimization of the entire system is not required. The purpose of this work is to optimize the subject intersection, while integrating it into the existing signal system with limited impact to the system operations. This item also includes an evaluation of the overall system operation, including the traffic responsive program.

For the purposes of re-optimization work, an intersection shall include all traffic movements operated by the subject controller and cabinet.

After the signal improvements are completed, the signal shall be re-optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants. Traffic signal system optimization work,

including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the Department, if available and as appropriate. The existing SCAT Report is available for review at the District One office and if the Consultant provides blank computer disks, copies of computer simulation files for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) LEVEL I Re-Optimization

1. The following tasks are associated with LEVEL I Re-Optimization.
 - a. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system.
 - b. Proposed signal timing plan for the new or modified intersection(s) shall be forwarded to IDOT for review prior to implementation.
 - c. Consultant shall conduct on-site implementation of the timings at the turn-on and make fine-tuning adjustments to the timings of the subject intersection in the field to alleviate observed adverse operating conditions and to enhance operations.
2. The following deliverables shall be provided for LEVEL I Re-Optimization.
 - a. Consultant shall furnish to IDOT a cover letter describing the extent of the re-optimization work performed.
 - b. Consultant shall furnish an updated intersection graphic display for the subject intersection to IDOT and to IDOT's Traffic Signal Maintenance Contractor.

(b) LEVEL II Re-Optimization

1. In addition to the requirements described in the LEVEL I Re-Optimization above, the following tasks are associated with LEVEL II Re-Optimization.
 - a. Traffic counts shall be taken at the subject intersection after the traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.
 - b. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
 - c. Traffic responsive program operation shall be evaluated to verify proper pattern selection and lack of oscillation and a report of the operation shall be provided to IDOT.
2. The following deliverables shall be provided for LEVEL II Re-Optimization.
 - a. Consultant shall furnish to IDOT one (1) copy of a technical memorandum for the optimized system. The technical memorandum shall include the following elements:
 - (1) Brief description of the project
 - (2) Printed copies of the analysis output from Synchro (or other appropriate, approved optimization software file)
 - (3) Printed copies of the traffic counts conducted at the subject intersection
 - b. Consultant shall furnish to IDOT two (2) CDs for the optimized system. The CDs shall include the following elements:
 - (1) Electronic copy of the technical memorandum in PDF format
 - (2) Revised Synchro files (or other appropriate, approved optimization software file) including the new signal and the rest of the signals in the closed loop system
 - (3) Traffic counts conducted at the subject intersection

- (4) New or updated intersection graphic display file for the subject intersection
- (5) The CD shall be labeled with the IDOT system number and master location, as well as the submittal date and the consultant logo. The CD case shall include a clearly readable label displaying the same information securely affixed to the side and front.

Basis of Payment. This work shall be paid for at the contract unit price each for RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL I or RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL II, which price shall be payment in full for performing all work described herein per intersection. Following completion of the timings and submittal of specified deliverables, 100 percent of the bid price will be paid.

OPTIMIZE TRAFFIC SIGNAL SYSTEM

Description. This work shall consist of optimizing a closed loop traffic signal system.

OPTIMIZE TRAFFIC SIGNAL SYSTEM applies when a new or existing closed loop traffic signal system is to be optimized and a formal Signal Coordination and Timing (SCAT) Report is to be prepared. The purpose of this work is to improve system performance by optimizing traffic signal timings, developing a time of day program and a traffic responsive program.

After the signal improvements are completed, the signal system shall be optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the Department, if available and as appropriate. The existing SCAT Report is available for review at the District One office and if the Consultant provides blank computer disks, copies of computer simulation files for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) The following tasks are associated with OPTIMIZE TRAFFIC SIGNAL SYSTEM.

1. Appropriate signal timings and offsets shall be developed for each intersection and appropriate cycle lengths shall be developed for the closed loop signal system.
2. Traffic counts shall be taken at all intersections after the permanent traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit and multi-unit heavy vehicles.
3. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
4. A traffic responsive program shall be developed, which considers both volume and occupancy. A time-of-day program shall be developed for used as a back-up system.
5. Proposed signal timing plan for the new or modified intersection shall be forwarded to IDOT for review prior to implementation.

6. Consultant shall conduct on-site implementation of the timings and make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.
 7. Speed and delay studies shall be conducted during each of the count periods along the system corridor in the field before and after implementation of the proposed timing plans for comparative evaluations. These studies should utilize specialized electronic timing and measuring devices.
- (b) The following deliverables shall be provided for OPTIMIZE TRAFFIC SIGNAL SYSTEM.
1. Consultant shall furnish to IDOT one (1) copy of a SCAT Report for the optimized system. The SCAT Report shall include the following elements:

<p>Cover Page in color showing a System Map</p> <p>Figures</p> <ol style="list-style-type: none"> 1. System overview map – showing system number, system schematic map with numbered system detectors, oversaturated movements, master location, system phone number, cycle lengths, and date of completion. 2. General location map in color – showing signal system location in the metropolitan area. 3. Detail system location map in color – showing cross street names and local controller addresses. 4. Controller sequence – showing controller phase sequence diagrams.
<p>Table of Contents</p> <p>Tab 1: Final Report</p> <ol style="list-style-type: none"> 1. Project Overview 2. System and Location Description (Project specific) 3. Methodology 4. Data Collection 5. Data Analysis and Timing Plan Development 6. Implementation <ol style="list-style-type: none"> a. Traffic Responsive Programming (Table of TRP vs. TOD Operation) 7. Evaluation <ol style="list-style-type: none"> a. Speed and Delay runs
<p>Tab 2. Turning Movement Counts</p> <ol style="list-style-type: none"> 1. Turning Movement Counts (Showing turning movement counts in the intersection diagram for each period, including truck percentage)
<p>Tab 3. Synchro Analysis</p> <ol style="list-style-type: none"> 1. AM: Time-Space diagram in color, followed by intersection Synchro report (Timing report) summarizing the implemented timings. 2. Midday: same as AM 3. PM: same as AM
<p>Tab 4: Speed and Delay Studies</p> <ol style="list-style-type: none"> 1. Summary of before and after runs results in two (2) tables showing travel time and delay time. 2. Plot of the before and after runs diagram for each direction and time period.
<p>Tab 5: Electronic Files</p> <ol style="list-style-type: none"> 1. Two (2) CDs for the optimized system. The CDs shall include the following elements: <ol style="list-style-type: none"> a. Electronic copy of the SCAT Report in PDF format b. Copies of the Synchro files for the optimized system c. Traffic counts for the optimized system d. New or updated intersection graphic display files for each of the system intersections and the system graphic display file including system detector locations and addresses.

Basis of Payment. The work shall be paid for at the contract unit each for OPTIMIZE TRAFFIC SIGNAL SYSTEM, which price shall be payment in full for performing all work described herein for the entire traffic signal system. Following the completion of traffic counts, 25 percent of the bid price will be paid. Following the completion of the Synchro analysis, 25 percent of the bid price will be paid. Following the

setup and fine tuning of the timings, the speed-delay study, and the TRP programming, 25 percent of the bid price will be paid. The remaining 25 percent will be paid when the system is working to the satisfaction of the engineer and the report and CD have been submitted.

TEMPORARY TRAFFIC SIGNAL TIMINGS

Description. This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the duration of the temporary signalized condition.

All timings and adjustments necessary for this work shall be performed by an approved Consultant who has previous experience in optimizing Closed Loop Traffic signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants.

The following tasks are associated with TEMPORARY TRAFFIC SIGNAL TIMINGS.

- (a) Consultant shall attend temporary traffic signal inspection (turn-on) and conduct on-site implementation of the traffic signal timings. Make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.
- (b) Consultant shall provide monthly observation of traffic signal operations in the field.
- (c) Consultant shall provide on-site consultation and adjust timings as necessary for construction stage changes, temporary traffic signal phase changes, and any other conditions affecting timing and phasing, including lane closures, detours, and other construction activities.
- (d) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

Basis of Payment. The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMINGS, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on, 50 percent of the bid price will be paid. The remaining 50 percent of the bid price will be paid following the removal of the temporary traffic signal installation.

TEMPORARY TRAFFIC SIGNAL INSTALLATION

Revise Section 890 of the Standard Specifications to read:

General. Only an approved equipment vendor will be allowed to assemble the temporary traffic signal cabinet. Also, an approved equipment vendor shall assemble and test a temporary railroad traffic signal cabinet. (Refer to the "Inspection of Controller and Cabinet" specification). A representative of the approved control equipment vendor shall be present at the temporary traffic signal turn-on inspection.

Construction Requirements

(a) Controllers.

1. Only controllers supplied by one of the District approved closed loop equipment manufacturers will be approved for use at temporary signal locations. All controllers used for temporary traffic signals shall be fully actuated NEMA microprocessor based with RS232 data entry ports compatible with the latest revision of monitoring software approved by IDOT District 1, installed in NEMA TS1 or TS2 cabinets with 8 phase back panels, capable of supplying 255 seconds of cycle length and individual phase length settings up to 99 seconds. On projects with one lane open and two way traffic flow, such as bridge deck repairs, the temporary signal controller shall be capable of providing an adjustable all red clearance setting of up to 30 seconds in length. All controllers used for temporary traffic signals shall meet or exceed the requirements of Section 857 of the Standard Specifications with regards to internal time base coordination and preemption.
2. All control equipment for the temporary traffic signal(s) shall be furnished by the Contractor unless otherwise stated in the plans. On projects with multiple temporary traffic signal installations, all controllers shall be the same manufacturer brand and model number with current software installed.

(b) Cabinets. All temporary traffic signal cabinets shall have a closed bottom made of aluminum alloy. The bottom shall be sealed along the entire perimeter of the cabinet base to ensure a water, dust and insect-proof seal. The bottom shall provide a minimum of two (2) 4 inch (100 mm) diameter holes to run the electric cables through. The 4 inch (100 mm) diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.

(c) Grounding. Grounding shall be provided for the temporary traffic signal cabinet meeting or exceeding the applicable portions of the National Electrical Code, Section 807 of the Standard Specifications and shall meet the requirements of the District 1 Traffic Signal Specifications for "Grounding of Traffic Signal Systems".

(d) Traffic Signal Heads. All traffic signal sections and pedestrian signal sections shall be 12 inches (300 mm). Traffic signal sections shall be LED with expandable view, unless otherwise approved by the Engineer. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Engineer. The Contractor shall furnish enough extra cable length to relocate heads to any position on the span wire or at locations illustrated on the plans for construction staging. The temporary traffic signal shall remain in operation during all signal head relocations. Each temporary traffic signal head shall have its own cable from the controller cabinet to the signal head. Signal heads shall be mounted no less than 17-ft and no more than 25-ft above the crown of the roadway. Signal heads with backplates shall be measured from the bottom of the backplate for minimum clearance and from the top signal section for maximum clearance.

(e) Interconnect

1. Temporary traffic signal interconnect shall be provided using fiber optic cable or wireless interconnect technology as specified in the plans. The Contractor may

request, in writing, to substitute the fiber optic temporary interconnect indicated in the contract documents with a wireless interconnect. The Contractor must provide assurances that the radio device will operate properly at all times and during all construction staging. If approved for use by the Engineer, the Contractor shall submit marked-up traffic signal plans indicating locations of radios and antennas and installation details. If wireless interconnect is used, and in the opinion of the engineer, it is not viable, or if it fails during testing or operations, the Contractor shall be responsible for installing all necessary poles, fiber optic cable, and other infrastructure for providing temporary fiber optic interconnect at no cost to the contract.

2. The existing system interconnect and phone lines are to be maintained as part of the Temporary Traffic Signal Installation specified for on the plan. The interconnect shall be installed into the temporary controller cabinet as per the notes or details on the plans. All labor and equipment required to install and maintain the existing interconnect as part of the Temporary Traffic Signal Installation shall be included in the item Temporary Traffic Signal Installation. When shown in the plans, temporary traffic signal interconnect equipment shall be furnished and installed. The temporary traffic signal interconnect shall maintain interconnect communications throughout the entire signal system for the duration of the project.
3. Temporary wireless interconnect, compete. The radio interconnect system shall be compatible with Eagle or Econolite controller closed loop systems. This item shall include all materials, labor and testing to provide the completely operational closed loop system as shown on the plans. The radio interconnect system shall include the following components:
 - a. Rack or Shelf Mounted RS-232 Frequency Hopping Spread Spectrum (FHSS) Radio
 - b. Software for Radio Configuration (Configure Frequency and Hopping Patterns)
 - c. Antennas (Omni Directional or Yagi Directional)
 - d. Antenna Cables, LMR400, Low Loss. Max. 100-ft from controller cabinet to antenna
 - e. Brackets, Mounting Hardware, and Accessories Required for Installation
 - f. RS232 Data Cable for Connection from the radio to the local or master controller
 - g. All other components required for a fully functional radio interconnect system

All controller cabinet modifications and other modifications to existing equipment that are required for the installation of the radio interconnect system components shall be included in this item.

The radio interconnect system may operate at 900Mhz (902-928) or 2.4 Ghz depending on the results of a site survey. The telemetry shall have an acceptable rate of transmission errors, time outs, etc. comparable to that of a hardwire system.

The proposed master controller and telemetry module shall be configured for use with the radio interconnect at a minimum rate of 9600 baud.

The radio interconnect system shall include all other components required for a complete and fully functional telemetry system and shall be installed in accordance to the manufacturers recommendations.

The following radio equipment is currently approved for use in Region One/District One: Encon Model 5200 and Intuicom Communicator II.

- (f) Emergency Vehicle Pre-Emption. All emergency vehicle preemption equipment (light detectors, light detector amplifiers, confirmation beacons, etc.) as shown on the temporary

- traffic signal plans shall be provided by the Contractor. It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle preemption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency. All light operated systems shall operate at a uniform rate of 14.035 hz \pm 0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District. All labor and material required to install and maintain the Emergency Vehicle Preemption installation shall be included in the item Temporary Traffic Signal Installation.
- (g) Vehicle Detection. All temporary traffic signal installations shall have vehicular detection installed as shown on the plans or as directed by the Engineer. Pedestrian push buttons shall be provided for all pedestrian signal heads/phases as shown on the plans or as directed by the Engineer. All approaches shall have vehicular detection provided by Video Vehicle Detection System as shown on the plans or as directed by the Engineer. The microwave vehicle sensor or video vehicle detection system shall be approved by IDOT before furnishing and installing. The Contractor shall install, wire, and adjust the alignment of the microwave vehicle sensor or video vehicle detection system in accordance to the manufacturer's recommendations and requirements. The Contractor shall be responsible for adjusting the alignment of the microwave vehicle sensor or video vehicle detection system for all construction staging changes and for maintaining proper alignment throughout the project. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up and maintaining the microwave vehicle sensor or video vehicle detection system. An in-cabinet video monitor shall be provided with all video vehicle detection systems and shall be included in the item Temporary Traffic Signal Installation.
- (h) Signs. All existing street name and intersection regulatory signs shall be removed from existing poles and relocated to the temporary signal span wire. If new mast arm assembly and pole(s) and posts are specified for the permanent signals, the signs shall be relocated to the new equipment at no extra cost.
- (i) Energy Charges. The electrical utility energy charges for the operation of the traffic signal installation shall be paid for by others if the installation replaces an existing signal. Otherwise charges shall be paid for under 109.05 of the Standard Specifications.
- (j) Maintenance. Maintenance shall meet the requirements of the Traffic Specifications and District Specifications for "Maintenance of Existing Traffic Signal Installation." Maintenance of temporary signals and of the existing signals shall be included to the cost of this item. When temporary traffic signals are to be installed at locations where existing signals are presently operating, the Contractor shall be fully responsible for the maintenance of the existing signal installation as soon as he begins any physical work on the Contract or any portion thereof. Maintenance responsibility of the existing signals shall be included to the item Temporary Traffic Signal Installation(s). In addition, a minimum of seven (7) days prior to assuming maintenance of the existing traffic signal installation(s) under this Contract, the Contractor shall request that the Resident Engineer contact the Bureau of Traffic (847) 705-4424 for an inspection of the installation(s).
- (k) Temporary Traffic Signals for Bridge Projects. Temporary Traffic Signals for bridge projects shall follow the State Standards, Standard Specifications, District 1 Traffic Signal Specifications and any plans for Bridge Temporary Traffic Signals included in the plans. The installation shall meet the above requirements for "Temporary Traffic Signal Installation". In addition all electric cable shall be aurally suspended, at a minimum height of 18 feet (5.5m), on temporary wood poles (Class 5 or better) of 45 feet (13.7 m), minimum height. The signal heads shall be span wire mounted or bracket mounted to the wood pole or as directed by the Engineer. The Controller cabinet shall be mounted to the wood pole or as directed by the Engineer. Microwave vehicle sensors or video vehicle detection may be used in place of the detector loops as approved by the Engineer.

(l) Temporary Portable Traffic Signal for Bridge Projects.

1. Unless otherwise directed by the Engineer, temporary portable traffic signals shall be restricted to use on roadways of less than 8000 ADT that have limited access to electric utility service, shall not be installed on projects where the estimated need exceeds ten (10) weeks, and shall not be in operation during the period of November through March. The Contractor shall replace the temporary portable traffic signals with temporary span wire traffic signals noted herein at no cost to the contract if the bridge project or Engineer requires temporary traffic signals to remain in operation into any part of period of November through March. If, in the opinion of the engineer, the reliability and safety of the temporary portable traffic signal is not similar to that of a temporary span wire traffic signal installation, the Contractor shall replace the temporary portable traffic signals with temporary span wire traffic signals noted herein at no cost to the contract.
 2. The controller and LED signal displays shall meet the above requirements for "Temporary Traffic Signal Installation".
 3. Work shall be according to Article 701.18(b) of the Standard Specifications except as noted herein.
 4. General.
 - a. The temporary portable bridge traffic signals shall be trailer-mounted units. The trailer-mounted units shall be set up securely and level. Each unit shall be self-contained and consist of two signal heads. The left signal head shall be mounted on a mast arm capable of extending over the travel lane. Each unit shall contain a solar cell system to facilitate battery charging. There shall be a minimum of 12 days backup reserve battery supply and the units shall be capable of operating with a 120 V power supply from a generator or electrical service.
 - b. All signal heads located over the travel lane shall be mounted at a minimum height of 17 feet (5m) from the bottom of the signal back plate to the top of the road surface. All far right signal heads located outside the travel lane shall be mounted at a minimum height of 8 feet (2.5m) from the bottom of the signal back plate to the top of the adjacent travel lane surface.
 - c. The long all red intervals for the traffic signal controller shall be adjustable up to 250 seconds in one-second increments.
 - d. As an alternative to detector loops, temporary portable bridge traffic signals may be equipped with microwave sensors or other approved methods of vehicle detection and traffic actuation.
 - e. All portable traffic signal units shall be interconnected using hardwire communication cable. Radio communication equipment may be used only with the approval of the Engineer. If radio communication is used, a site analysis shall be completed to ensure that there is no interference present that would affect the traffic signal operation. The radio equipment shall meet all applicable FCC requirements.
 - f. The temporary portable bridge traffic signal system shall meet the physical display and operational requirements of conventional traffic signals as specified in Part IV of the Manual on Uniform Traffic Control Devices (MUTCD). The signal system shall be designed to continuously operate over an ambient temperature range between -30 °F (-34 °C) and 120 °F (48 °C). When not being utilized to

inform and direct traffic, portable signals shall be treated as nonoperating equipment according to Article 701.11.

- g. Basis of Payment. This work will be paid for according to Article 701.20(c).

Basis of Payment. This work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL INSTALLATION, TEMPORARY BRIDGE TRAFFIC SIGNAL INSTALLATION, or TEMPORARY PORTABLE BRIDGE TRAFFIC SIGNAL INSTALLATION. The price of which shall include all costs for the modifications required for traffic staging, changes in signal phasing as required in the Contract plans, microwave vehicle sensors, video vehicle detection system, any maintenance or adjustment to the microwave vehicle sensors/video vehicle detection system, all material required, the installation and complete removal of the temporary traffic signal.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT

Add the following to Article 895.05 of the Standard Specifications:

The traffic signal equipment which is to be removed and is to become the property of the Contractor shall be disposed of outside the right-of-way at the Contractor's expense.

All equipment to be returned to the State shall be delivered by the Contractor to the State's Traffic Signal Maintenance Contractor's main facility. The Contractor shall contact the State's Electrical Maintenance Contractor to schedule an appointment to deliver the equipment. No equipment will be accepted without a prior appointment. All equipment shall be delivered within 30 days of removing it from the traffic signal installation. The Contractor shall provide 5 copies of a list of equipment that is to remain the property of the State, including model and serial numbers, where applicable. He shall also provide a copy of the Contract plan or special provision showing the quantities and type of equipment. Controllers and peripheral equipment from the same location shall be boxed together (equipment from different locations may not be mixed) and all boxes and controller cabinets shall be clearly marked or labeled with the location from which they were removed. If equipment is not returned with these requirements, it will be rejected by the State's Electrical Maintenance Contractor. The Contractor shall be responsible for the condition of the traffic signal equipment from the time he takes maintenance of the signal installation until the acceptance of a receipt drawn by the State's Electrical Maintenance Contractor indicating the items have been returned in good condition.

The Contractor shall safely store and arrange for pick up of all equipment to be returned to agencies other than the State. The Contractor shall package the equipment and provide all necessary documentation as stated above.

Traffic signal equipment which is lost or not returned to the Department for any reason shall be replaced with new equipment meeting the requirements of these Specifications.

TRAFFIC SIGNAL PAINTING

Description. This work shall include surface preparation, powder type painted finish application and packaging of new galvanized steel traffic signal mast arm poles and posts assemblies. All work associated with applying the painted finish shall be performed at the manufacturing facility for the pole assembly or post or at a painting facility approved by the Engineer. Traffic signal mast arm shrouds and post bases shall also be painted the same color as the pole assemblies and posts.

Surface Preparation

All weld flux and other contaminants shall be mechanically removed. The traffic mast arms and post assemblies shall be degreased, cleaned, and air dried to assure all moisture is removed.

Painted Finish

All galvanized exterior surfaces shall be coated with a urethane or triglycidyl isocyanurate (TGIC) polyester powder to a dry film thickness of 2.0 mils. Prior to application, the surface shall be mechanically etched by brush blasting (Ref. SSPC-SP7) and the zinc coated substrate preheated to 450 degrees F for a minimum one (1) hour. The coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400 degrees F. The finish paint color shall be one of the manufacturer's standard colors and shall be as selected by the local agency responsible for paint costs. The Contractor shall confirm, in writing, the color selection with the local responsible agency and provide a copy of the approval to the Engineer and a copy of the approval shall be included in the material catalog submittal.

Traffic signal heads, pedestrian signal heads and controller cabinets are not included in this pay item.

Any damage to the finish after leaving the manufacturer's facility shall be repaired to the satisfaction of the Engineer using a method approvable by the Engineer and manufacturer. If while at the manufacturer's facility the finish is damaged, the finish shall be re-applied.

Warranty

The Contractor shall furnish in writing to the Engineer, the paint manufacturer's standard warranty and certification that the paint system has been properly applied.

Packaging

Prior to shipping, the poles and posts shall be wrapped in ultraviolet-inhibiting plastic foam or rubberized foam.

Basis of Payment. This work shall be paid for at the contract unit price each for PAINT NEW MAST ARM POLE, UNDER 40 FEET (12.19 METER); PAINT NEW MAST ARM POLE, 40 FEET (12.19 METER) AND OVER; PAINT NEW COMBINATION MAST ARM POLE, UNDER 40 FEET (12.19 METER); PAINT NEW COMBINATION MAST ARM POLE, 40 FEET (12.19 METER) AND OVER; or TRAFFIC SIGNAL POST of any height, which shall be payment in full for painting and packaging the traffic signal mast arm poles and posts described above including all shrouds, bases and appurtenances.

Division 1000 Materials

Pedestrian Push-Button

Revise Article 1074.02 of the Standard Specifications to read:

- (a) General. Push-button assemblies shall be ADA compliant, highly vandal resistant, be pressure activated with minimal movement and cannot be stuck in a closed or constant call position. A red LED and audible tone shall be provided for confirmation of an actuation call.
- (b) Housing. The push-button housing shall be solid 6061 aluminum and powder coated yellow, unless otherwise noted on the plans.
- (c) Actuator. The actuator shall be stainless steel with a solid state electronic Piezo switch rated for a minimum of 20 million cycles with no moving plunger or moving electrical contacts. The operating voltage shall be 12-24 V AC/DC.
- (d) Pedestrian Station. Stations shall be designed to be mounted directly to a post, mast arm pole or wood pole. The station shall be aluminum and accept a 3-inch round push button assembly and 5 X 7 ¾ -inch R10-3b or R10-3d sign. A larger station will be necessary to accommodate the sign, R10-3e, for a count-down pedestrian signal.

Controller Cabinet And Peripheral Equipment

Add the following to Article 1074.03 of the Standard Specifications:

- (a) Cabinets shall be designed for NEMA TS2 Type 1 operation. All cabinets shall be pre-wired for a minimum of eight (8) phases of vehicular, four (4) phases of pedestrian and four (4) phases of overlap operation.
- (b)(5) Cabinets – Provide 1/8" (3.2 mm) thick unpainted aluminum alloy 5052-H32. The surface shall be smooth, free of marks and scratches. All external hardware shall be stainless steel.
- (b) (6) Controller Harness – Provide a TS2 Type 2 "A" wired harness in addition to the TS2 Type 1 harness.
- (b) (7) Surge Protection – EDCO Model 1210 IRS with failure indicator.
- (b) (8) BIU – Containment screw required.
- (b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.
- (b) (10) Switch Guards – All switches shall be guarded.
- (b) (11) Heating – Two (2) porcelain light receptacles with cage protection controlled by both a wall switch and a thermostat or a thermostatically controlled 150 watt strip heater.
- (b) (12) Plan & Wiring Diagrams – 12" x 16" (3.05mm x 4.06mm) or 22" x 34" (560 mm x 860 mm) moisture sealed container attached to door.
- (b) (13) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.
- (b) (14) Field Wiring Labels – All field wiring shall be labeled.
- (b) (15) Field Wiring Termination – Approved channel lugs required.
- (b) (16) Power Panel – Provide a nonconductive shield.
- (b) (17) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.
- (b) (18) Police Door – Provide wiring and termination for plug in manual phase advance switch.
- (b) (19) Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or equivalent.

Railroad, Full-Actuated Controller And Cabinet

Add the following to Article 857.02 of the Standard Specifications:

Controller shall comply with Article 1073.01 as amended in these Traffic Signal Special Provisions.

Controller Cabinet and Peripheral Equipment shall comply with Article 1074.03 as amended in these Traffic Signal Special Provisions.

Add the following to Articles 1073.01 (c) (2) and 1074.03 (a) (5) (e) of the Standard Specifications:

Controllers and cabinets shall be new and NEMA TS2 Type 1 design.

A method of monitoring and/or providing redundancy to the railroad preemptor input to the controller shall be included as a component of the Railroad, Full Actuated Controller and Cabinet installation and be verified by the traffic signal equipment supplier prior to installation.

Railroad interconnected controllers and cabinets shall be assembled only by an approved traffic signal equipment supplier. The equipment shall be tested and approved in the equipment supplier's District One facility prior to field installation.

Electric Cable

Delete "or stranded, and No. 12 or" from the last sentence of Article 1076.04 (a) of the Standard Specifications.

Mast Arm Assembly And Pole

Add the following to Article 1077.03 (a) of the Standard Specifications:

Traffic signal mast arms shall be one piece construction, unless otherwise approved by the Engineer. All poles shall be galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization.

This work shall consist of furnishing and installing a galvanized steel or extruded aluminum shroud for protection of the mast arm pole base plate similar to the dimensions detailed in the "District One Standard Traffic Signal Design Details." The shroud shall be of sufficient strength to deter pedestrian and vehicular damage. The shroud shall allow air to circulate throughout the mast arm but not allow infestation of insects or other animals. The shroud shall be constructed, installed and designed not to be hazardous to probing fingers and feet. All mounting hardware shall be stainless steel. The shroud shall not be paid for separately but shall be included in the cost of the mast arm assembly and pole.

Traffic Signal Post

Add the following to Article 1077.01 (b) of the Standard Specifications:

All posts and bases shall be steel and hot dipped galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization.

Signal Heads

Add the following to Section 1078 of the Standard Specifications to read:

All signal and pedestrian heads shall provide 12" (300 mm) displays with glossy yellow or black polycarbonate housings. All head housings shall be the same color (yellow or black) at the intersection. For new signalized intersections and existing signalized intersections where all signal and/or pedestrian heads are being replaced, the proposed head housings shall be black. Where only selected heads are being replaced, the proposed head housing color (yellow or black) shall match existing head housings. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Post top mounting collars are required on all posts, and shall be constructed of the same material as the brackets.

Pedestrian signal heads shall be furnished with the international symbolic "Walking Person" and "Upraised Palm" lenses. Egg crate sun shields are not permitted.

Signal heads shall be positioned according to the "District One Standard Traffic Signal Design Details."

Signal Head, Backplate

Delete 1st sentence of Article 1078.03 of the Standard Specifications and add "All backplates shall be aluminum and louvered".

Inductive Loop Detector

Add the following to Article 1079.01 of the Standard Specifications:

Contracts requiring new cabinets shall provide for card mounted detector amplifiers. Loop amplifiers shall provide LCD displays with loop frequency, inductance, and change of inductance readings.

Illuminated Sign, Light Emitting Diode

Revise Sections 891 of the Standard Specifications to read:

Description. This work shall consist of furnishing and installing an illuminated sign with light emitting diodes.

General. The light emitting diode (LED) blank out signs shall be manufactured by National Sign & Signal Company, or an approved equal and consist of a weatherproof housing and door, LEDs and transformers.

(a) Display.

1. The LED blank out sign shall provide the correct symbol and color for "NO LEFT TURN" OR "NO RIGHT TURN" indicated in accordance with the requirements of the "Manual on Uniform Traffic Control Devices". The message shall be formed by rows of LEDs.
2. The message shall be clearly legible. The message shall be highly visible, anywhere and under any lighting conditions, within a 15 degree cone centered about the optic axis.

The sign face shall be 24 inches (600 mm) by 24 inches (600 mm). The sign face shall be completely illegible when not illuminated. No symbol shall be seen under any ambient light condition when not illuminated.

3. All LEDs shall be T-1 3/4 (5mm) and have an expected lamplife of 100,000 hours. Operating wavelengths will be Red-626nm, Amber-590nm, and Bluish/Green-505nm. Transformers shall be rated for the line voltage with Class A insulation and weatherproofing. The sign shall be designed for operation over a range of temperatures from -35F to +165 F (-37C to +75C).
4. The LED module shall include the message plate, high intensity LEDs and LED drive electronics. Door panels shall be flat black and electrical connections shall be made via barrier-type terminal strip. All fasteners and hardware shall be corrosion resistant stainless steel.

(b) Housing.

1. The housing shall be constructed of extruded aluminum. All corners and seams shall be heli-arc welded to provide a weatherproof seal around the entire case. Hinges shall be continuous full-length stainless steel. Signs shall have stainless steel hardware and provide tool free access to the interior of the sign. Doors shall be 0.125-inch thick extruded aluminum with a 3/16-inch x 1-inch neoprene gasket and sun hood. The sign face shall have a polycarbonate, matte clear, lexan face plate. Drainage shall be provided by four drain holes at the corners of the housing. The finish on the sign housing shall include two coats of exterior enamel applied after the surface is acid-etched and primed with zinc-chromate primer.
2. Mounting hardware shall be black polycarbonate or galvanized steel and similar to mounting Signal Head hardware and brackets specified herein.

Basis of Payment. This work shall be paid for at the unit price each for ILLUMINATED SIGN, L.E.D.

Grounding Existing Handhole Frame And Cover

Description. This work shall consist of all materials and labor required to bond the equipment grounding conductor to the existing handhole frame and handhole cover. All installations shall meet the requirements of the details in the "District One Standard Traffic Signal Design Details" and applicable portions of the Specifications.

The equipment grounding conductor shall be bonded to the handhole frame and to the handhole cover. Two (2) ½-inch diameter x 1 ¼-inch long hex-head stainless steel bolts, spaced 1.75-inches apart center-to-center shall be fully welded to the frame and to the cover to accommodate a heavy duty Listed grounding compression terminal (Burdny type YGHA or approved equal). The grounding compression terminal shall be secured to the bolts with stainless steel split-lock washers and nylon-insert locknuts.

Welding preparation for the stainless steel bolt hex-head to the frame and to the cover shall include thoroughly cleaning the contact and weldment area of all rust, dirt and contaminates. The Contractor shall assure a solid strong weld. The welds shall be smooth and thoroughly cleaned of flux and spatter. The grounding installation shall not affect the proper seating of the cover when closed.

The grounding cable shall be paid for separately.

Method of Measurement. Units measured for payment will be counted on a per handhole basis, regardless of the type of handhole and its location.

Basis of Payment. This work shall be paid for at the contract unit price each for GROUNDING EXISTING HANDHOLE FRAME AND COVER which shall be payment in full for grounding the handhole complete.

Unit Duct

All installations of Unit Duct shall be included in the contract and not paid for separately. Polyethylene unit duct shall be used for detector loop raceways to the handholes. On temporary traffic signal installations with detector loops, polyethylene unit duct shall be used for detector loop raceways from the saw-cut to 10 feet (3m) up the wood pole, unless otherwise shown on the plans. Unit duct shall meet the requirements of NEC Article 343.

Uninterruptible Power Supply (UPS)

Description. This work shall consist of furnishing and installing an Uninterruptible Power Supply (UPS).

The UPS shall have the power capacity to provide normal operation of a signalized intersection that utilizes all LED type signal head optics, for a minimum of six hours.

The UPS shall include, but not be limited to the following: inverter/charger, power transfer relay, batteries, battery cabinet, a separate manually operated non-electronic bypass switch, and all necessary hardware and interconnect wiring according to the plans. The UPS shall provide reliable emergency power to the traffic signals in the event of a power failure or interruption. The transfer from utility power to battery power and visa versa shall not interfere with the normal operation of traffic controller, conflict monitor/malfunction management unit, or any other peripheral devices within the traffic controller assembly.

The UPS shall be designed for outdoor applications, and shall meet the environmental requirements of, "NEMA Standards Publication No. TS 2 – Traffic Controller Assemblies", except as modified herein.

Materials. The UPS shall be line interactive and provide voltage regulation and power conditioning when utilizing utility power. The UPS shall be sized appropriately for the intersection's normal traffic signal operating connected load, plus 20 percent (20%). The total connected traffic signal load shall not exceed the published ratings for the UPS. The UPS shall provide a minimum of six (6) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 700 WVA active output capacity, with 90 percent minimum inverter efficiency).

The maximum transfer time from loss of utility power to switchover to battery backed inverter power shall be 65 milliseconds.

The UPS shall have a minimum of three (3) sets of normally open (NO) and normally closed (NC) single-pole double-throw (SPDT) relay contact closures, available on a panel mounted terminal block or locking circular connectors, rated at a minimum 120 V/1 A, and labeled so as to identify each contact according to the plans. Contact closures shall be energized whenever the unit:

- Switches to battery power. Contact shall be labeled or marked "On Batt".
- Has been connected to battery power for two (2) hours. Contact shall be labeled or marked "Timer".
- Has an inverter/charger failure. Contact shall be labeled or marked "UPS Fail".

Operating temperature for the inverter/charger, power transfer relay, and manual bypass switch shall be -35 to 165 °F (-37 to +74 °C).

Both the power transfer relay and manual bypass switch shall be rated at 240 VAC/30 amps, minimum.

The UPS shall use a temperature-compensated battery charging system. The charging system shall compensate over a range of 1.4 – 2.2 mV/°F (2.5 - 4.0 mV/°C) per cell. The temperature sensor shall be external to the inverter/charger unit. The temperature sensor shall come with 6.5 ft (2 m) of wire.

Batteries shall not be recharged when battery temperature exceeds 122 °F \pm 5 °F (50 °C \pm 3 °C).

The UPS shall bypass the utility line power whenever the utility line voltage is outside of the following voltage range: 85 VAC to 135 VAC (\pm 2 VAC).

When utilizing battery power, the UPS output voltage shall be between 110 and 125 VAC, pure sine wave output, \leq 3 percent THD, 60 Hz \pm 3 Hz.

The UPS shall be compatible with the District's approved traffic controller assemblies utilizing NEMA TS 1 or NEMA TS 2 controllers and cabinet components for full time operation.

When the utility line power has been restored at above 90 VAC \pm 2 VAC for more than 30 seconds, the UPS shall dropout of battery backup mode and return to utility line mode.

When the utility line power has been restored at below 130 VAC \pm 2 VAC for more than 30 seconds, the UPS shall dropout of battery backup mode and return to utility line mode.

The UPS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service.

In the event of inverter/charger failure, the power transfer relay shall revert to the NC state, where utility line power is reconnected to the cabinet. In the event of an UPS fault condition, the UPS shall always revert back to utility line power.

Recharge time for the battery, from "protective low-cutoff" to 80 percent or more of full battery charge capacity, shall not exceed twenty hours.

The manual bypass switch shall be wired to provide power to the UPS when the switch is set to manual bypass.

When the intersection is in battery backup mode, the UPS shall bypass all internal cabinet lights, ventilation fans, service receptacles, any lighted street name signs, any automated enforcement equipment and any other devices directed by the Engineer.

As the battery reserve capacity reaches 50 percent, the intersection shall automatically be placed in all-red flash. The UPS shall allow the controller to automatically resume normal operation after the power has been restored. The UPS shall log an alarm in the controller for each time it is activated.

A blue LED indicator light shall be mounted on the front of the traffic signal cabinet or on the side of the UPS cabinet facing traffic and shall turn on to indicate when the cabinet power has been disrupted and the UPS is in operation. The light shall be a minimum 1 in. (25 mm) diameter, be viewable from the driving lanes, and able to be seen from 200 ft (60 m) away.

All 24 volt and 48 volt systems shall include an external or internal component that monitors battery charging to ensure that every battery in the string is fully charged. The device shall compensate for the effects of adding a new battery to an existing battery system by ensuring that the charge voltage is spread equally across all batteries.

Mounting/Configuration

The inverter/charger unit shall be rack or shelf-mounted.

All interconnect wiring provided between the power transfer relay, manual bypass switch, and cabinet terminal service block shall be at least 6.5 ft (2 m) of #10 AWG wire.

Relay contact wiring provided for each set of NO/NC relay contact closure terminals shall be 6.5 ft (2 m) of #18 AWG wire.

Battery Cabinet

Batteries, inverter/charger and power transfer relay shall be housed in a separate NEMA Type 3R cabinet. The cabinet shall be Aluminum alloy, 5052-H32, 0.125-inch thick and have a natural mill finish.

The door shall open to the entire cabinet, have a neoprene gasket, an Aluminum continuous piano hinge with stainless steel pin, and a three point locking system. The cabinet shall be provided with a main door lock which shall operate with a traffic industry conventional No. 2 key. Provisions for padlocking the door shall be provided.

The manually bypass switch shall be installed inside the traffic signal cabinet.

No more than three batteries shall be mounted on individual shelves for a cabinet housing six batteries and no more than four batteries per shelf for a cabinet housing eight batteries.

A minimum of three shelves shall be provided. Each shelf shall support a load of 132 lb (60 kg) minimum.

The battery cabinet housing shall have the following nominal outside dimensions: a width of 25 in. (785 mm), a depth of 16 in. (440 mm), and a height of 41 to 48 in. (1.1 to 1.3 m). Clearance between shelves shall be a minimum of 10 in. (250 mm).

The battery cabinet shall be ventilated through the use of louvered vents, filters, and one thermostatically controlled fan. The cabinet fan shall not be energized when the traffic signals are on UPS power.

The battery cabinet shall have provisions for an external generator connection.

The UPS with battery cabinet shall come with all bolts, conduits and bushings, gaskets, shelves, and hardware needed for mounting. A warning sticker shall be placed on the outside of the cabinet indicating that there is an uninterruptible power supply inside the cabinet.

Maintenance, Displays, Controls, and Diagnostics

The UPS shall include a display and/or meter to indicate current battery charge status and conditions.

The UPS shall have lightning surge protection compliant with IEEE/ANSI C.62.41.

The UPS shall be equipped with an integral system to prevent battery from destructive discharge and overcharge.

The UPS hardware and batteries shall be easily replaced without requiring any special tools or devices.

The UPS shall include a resettable front-panel event counter display to indicate the number of times the UPS was activated. The total number of hours the unit has operated on battery power shall be available from the controller unit or UPS unit.

The UPS shall be equipped with an RS-232 port.

The UPS shall include tip or kill switch installed in the battery cabinet, which shall completely disconnect power from the UPS when the switch is manually activated.

The UPS shall incorporate a flanged electric generator inlet for charging the batteries and operating the UPS. The generator connector shall be male type, twist-lock, rated as 15A, 125VAC with a NEMA L5-15P configuration and weatherproof lift cover plate (Hubbell model HBL4716C or approved equal). Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.

The manufacturer shall include two sets of equipment lists, operation and maintenance manuals, board-level schematic and wiring diagrams of the UPS, and battery data sheets. The manufacturer shall include any software needed to monitor, diagnose, and operate the UPS. The manufacturer shall include any required cables to connect the UPS to a laptop computer.

Battery System

Individual batteries shall be 12 V type, 65 amp-hour minimum capacity at 20 hours, and shall be easily replaced and commercially available off the shelf.

The UPS shall consist of an even number of batteries that are capable of maintaining normal operation of the signalized intersection for a minimum of six hours. Calculations shall be provided showing the number of batteries of the type supplied that are needed to satisfy this requirement. A minimum of four batteries shall be provided.

All batteries supplied in the UPS shall be either gel cell or AGM type, deep cycle, completely sealed, prismatic lead calcium based, silver alloy, valve regulated lead acid (VRLA) requiring no maintenance. All batteries in a UPS installation shall be the same type; mixing of gel cell and AGM types within a UPS installation is not permitted.

Batteries shall be certified by the manufacturer to operate over a temperature range of -13 to 160 °F (-25 to + 71 °C) for gel cell batteries and -40 to 140 °F (-40 to + 60 °C) for AGM type batteries.

The batteries shall be provided with appropriate interconnect wiring and corrosion resistant mounting trays and/or brackets appropriate for the cabinet into which they will be installed.

Batteries shall indicate maximum recharge data and recharging cycles.

Battery interconnect wiring shall be via a modular harness. Batteries shall be shipped with positive and negative terminals pre-wired with red and black cabling that terminates into a typical power-pole style connector. The harness shall be equipped with mating power-pole style connectors for the batteries and a single, insulated plug-in style connection to the inverter/charger unit. The harness shall allow batteries to be quickly and easily connected in any order and shall be keyed and wired to ensure proper polarity and circuit configuration.

Battery terminals shall be covered and insulated so as to prevent accidental shorting.

Warranty

The warranty for an uninterruptible power supply (UPS) shall cover a minimum of two years from date the equipment is placed in operation; however, the batteries of the UPS shall be warranted for full replacement for a minimum of five years from the date the traffic signal and UPS are placed into service.

Installation

When a UPS is installed at an existing traffic signal cabinet, the UPS cabinet shall partially rest on the lip of the existing controller cabinet foundation and be secured to the existing controller cabinet by means of at least four (4) stainless steel bolts. The UPS cabinet shall be completely enclosed with the bottom and back constructed of the same material as the cabinet.

When a UPS is installed at a new signal cabinet and foundation, it shall be mounted as shown on the plans.

Basis of Payment. This work will be paid for at the contract unit price per each for Uninterruptable Power Supply.

Signal Head, Light Emitting Diode

Description. This work shall consist of furnishing and installing a traffic signal head or pedestrian signal head with light emitting diodes (LED) of the type specified in the plan or retrofitting an existing traffic signal head with a traffic signal module or pedestrian signal module with LEDs as specified in the plans.

General. LED signal heads (All Face and Section Quantities), (All Mounting Types) shall conform fully to the requirements of Sections 880 and 881 and Articles 1078.01 and 1078.02 of the "Standard Specifications for Road and Bridge Construction," adopted January 1, 2007, and amended herein:

1. The LED signal modules shall be replaced or repaired if an LED signal module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery. LED signal modules which exhibit luminous intensities less than the minimum values specified in Table 1 of the ITE Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement (June 27, 2005) [VTSCH] or show signs of entrance of moisture or contaminants within the first 60 months of the date of delivery shall be replaced or repaired. The manufacturer's written warranty for the LED signal modules shall be dated, signed by an Officer of the company and included in the product submittal to the State.
2. Each module shall consist of an assembly that utilizes LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections.

(a) Physical and Mechanical Requirements

1. Modules can be manufactured under this specification for the following faces:
 - a. 12 inch (300 mm) circular, multi-section
 - b. 12 inch (300 mm) arrow, multi-section
 - c. 12 inch (300 mm) pedestrian, 2 sections
2. The maximum weight of a module shall be 4 lbs. (1.8 kg).
3. Each module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.
4. Material used for the lens and signal module construction shall conform to ASTM specifications for the materials.

5. The lens of the module shall be tinted with a wavelength-matched color to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face. Polymeric lens shall provide a surface coating or chemical surface treatment applied to provide abrasion resistance. The lens of the module shall be integral to the unit, convex with a smooth outer surface and made of plastic. The lens shall have a textured surface to reduce glare.
6. The use of tinting or other materials to enhance ON/OFF contrasts shall not affect chromaticity and shall be uniform across the face of the lens.
7. Each module shall have a symbol of the type of module (i.e. circle, arrow, etc.) in the color of the module. The symbol shall be 1 inch (25.4 mm) in diameter. Additionally, the color shall be written out in 1/2 inch (12.7mm) letters next to the symbol.

(b) Photometric Requirements

1. The minimum initial luminous intensity values for the modules shall conform to the values in Table 1 of the VTCSH (2005) for circular signal indications, and as stated in Table 3 of these specifications for arrow and pedestrian indications at 25°C.
2. The modules shall meet or exceed the illumination values stated in Article 1078.01(3)c of the "Standard Specifications for Road and Bridge Construction," Adopted January 1, 2007 for circular signal indications, and Table 3 of these specifications for arrow and pedestrian indications, throughout the useful life based on normal use in a traffic signal operation over the operating temperature range.
3. The measured chromaticity coordinates of the modules shall conform to the chromaticity requirements of Section 4.2 of the VTCSH (2005).
4. The LEDs utilized in the modules shall be AllnGaP technology for red, yellow, Portland orange (pedestrian) and white (pedestrian) indications, and GaN for green indications, and shall be the ultra bright type rated for 100,000 hours of continuous operation from -40°C to +74°C.

(c) Electrical

1. Maximum power consumption for LED modules is per Table 2.
2. LED modules will have EPA Energy Star compliance ratings, if applicable to that shape, size and color.
3. Operating voltage of the modules shall be 120 VAC. All parameters shall be measured at this voltage.
4. The modules shall be operationally compatible with currently used controller assemblies (solid state load switches, flashers, and conflict monitors).
5. When a current of 20 mA AC (or less) is applied to the unit, the voltage read across the two leads shall be 15 VAC or less.
6. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.
7. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

(d) Retrofit Traffic Signal Module

1. The following specification requirements apply to the Retrofit module only. All general specifications apply unless specifically superseded in this section.
 2. Retrofit modules can be manufactured under this specification for the following faces:
 - a. 12 inch (300 mm) circular, multi-section
 - b. 12 inch (300 mm) arrow, multi-section
 - c. 12 inch (300 mm) pedestrian, 2 sections
 3. Each Retrofit module shall be designed to be installed in the doorframe of a standard traffic signal housing. The Retrofit module shall be sealed in the doorframe with a one-piece EPDM (ethylene propylene rubber) gasket.
 4. The maximum weight of a Retrofit module shall be 4 lbs. (1.8 kg).
 5. Each Retrofit module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.
 6. Electrical conductors for modules, including Retrofit modules, shall be 39.4 inches (1m) in length, with quick disconnect terminals attached.
 7. The lens of the Retrofit module shall be integral to the unit, shall be convex with a smooth outer surface and made of plastic or of glass.
- (e) The following specification requirements apply to the 12 inch (300 mm) arrow module only. All general specifications apply unless specifically superseded in this section.
1. The arrow module shall meet specifications stated in Section 9.01 of the Equipment and Material Standards of the Institute of Transportation Engineers (November 1998) [ITE Standards], Chapter 2 (Vehicle Traffic Control Signal Heads) for arrow indications.
 2. The LEDs arrow indication shall be a solid display with a minimum of three (3) outlining rows of LEDs and at least one (1) fill row of LEDs.
- (f) The following specification requirement applies to the 12 inch (300 mm) programmed visibility (PV) module only. All general specifications apply unless specifically superseded in this section.
1. The LED module shall be a module designed and constructed to be installed in a programmed visibility (PV) signal housing without modification to the housing.
- (g) The following specification requirements apply to the 12 inch (300 mm) Pedestrian module only. All general specifications apply unless specifically superseded in this section.
1. Each pedestrian signal LED module shall provide the ability to actuate the solid upraised hand and the solid walking person on one 12 inch (300mm) section.
 2. Two (2) pedestrian sections shall be installed. The top section shall be wired to illuminate only the upraised hand and the bottom section shall be the walking man.
 3. "Egg Crate" type sun shields are not permitted. All figures must be a minimum of 9 inches (225mm) in height and easily identified from a distance of 120-feet (36.6m).

Basis of Payment. This item shall be paid for at the contract unit price each for SIGNAL HEAD, LED, of the type specified, which price shall be payment in full for furnishing the equipment described above including signal head, LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of signal faces, the number of signal sections, and the method of mounting.

Pedestrian head(s) shall be paid for at the contract unit price each for PEDESTRIAN SIGNAL HEAD, LED, of the type specified and of the particular kind of material when specified.

The type specified will indicate the number of faces and the method of mounting.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for SIGNAL HEAD, LED of the type specified, RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

The type specified will indicate the number of signal faces, the number of signal sections, and the method of mounting.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for PEDESTRIAN SIGNAL HEAD, LED, of the type specified, RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

The type specified will indicate the number of faces and the method of mounting.

TABLES

Table 2 Maximum Power Consumption (in Watts)

	Red		Yellow		Green	
	25°C	74°C	25°C	74°C	25°C	74°C
12 inch (300 mm) circular	11	17	22	25	15	15
12 inch (300 mm) arrow	9	12	10	12	11	11
	Hand-Portland Orange		Person-White			
Pedestrian Indication	6.2		6.3			

Table 3 Minimum Initial & Maintained Intensities for Arrow and Pedestrian Indications (in cd/m²)

	Red	Yellow	Green
Arrow Indication	5,500	11,000	11,000

Pedestrian Countdown Signal Head, Light Emitting Diode

Description. This work shall consist of furnishing and installing a pedestrian countdown signal head, with light emitting diodes (LED) of the type specified in the plan.

Pedestrian Countdown Signal Head, Light Emitting Diode, shall conform fully to the SIGNAL HEAD, LIGHT EMITTING DIODE specification, with the following modifications:

(a) Application

1. Pedestrian Countdown Signal Heads, shall not be used at signalized intersections where traffic signals and railroad warning devices are interconnected.
2. All pedestrian signals at an intersection shall be the same type and have the same display. No mixing of countdown and other types of pedestrian traffic signals will be permitted.

(b) General

1. The module shall operate in one mode: Clearance Cycle Countdown Mode Only. The countdown module shall display actual controller programmed clearance cycle and shall start counting when the flashing clearance signal turns on and shall countdown to "0" and turn off

when the steady Upraised Hand (symbolizing Don't Walk) signal turns on. Module shall not have user accessible switches or controls for modification of cycle.

2. At power on, the module shall enter a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.
3. The module shall re-program itself if it detects any increase or decrease of Pedestrian Timing. The counting unit will go blank once a change is detected and then take one complete pedestrian cycle (with no counter during this cycle) to adjust its buffer timer.
4. The module shall allow for consecutive cycles without displaying the steady Upraised Hand.
5. The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.
6. If the controller preempts during the Walking Person (symbolizing Walk), the countdown will follow the controller's directions and will adjust from Walking Person to flashing Upraised Hand. It will start to count down during the flashing Upraised Hand.
7. If the controller preempts during the flashing Upraised Hand, the countdown will continue to count down without interruption.
8. The next cycle, following the preemption event, shall use the correct, initially programmed values.
9. If the controller output displays Upraised Hand steady condition and the unit has not arrived to zero or if both the Upraised Hand and Walking Person are dark for some reason, the unit suspends any timing and the digits will go dark.
10. The digits will go dark for one pedestrian cycle after loss of power of more than 1.5 seconds.
11. The countdown numerals shall be two (2) "7 segment" digits forming the time display utilizing two rows of LEDs.
12. The LED module shall meet the requirements of the Institute of Transportation Engineers (ITE) LED purchase specification, "Pedestrian Traffic Control Signal Indications - Part 2: LED Pedestrian Traffic Signal Modules," or applicable successor ITE specifications, except as modified herein.
13. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.
14. In the event of a power outage, light output from the LED modules shall cease instantaneously.
15. The LEDs utilized in the modules shall be AlInGaP technology for Portland Orange (Countdown Numerals and Upraised Hand) and GaN technology for Lunar White (Walking Person) indications.
16. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

(c) Pedestrian Countdown Signal Heads

1. Pedestrian Countdown Signal Heads shall be 16 inch (406mm) x 18 inch (457mm), for single units with the housings glossy black polycarbonate. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on.

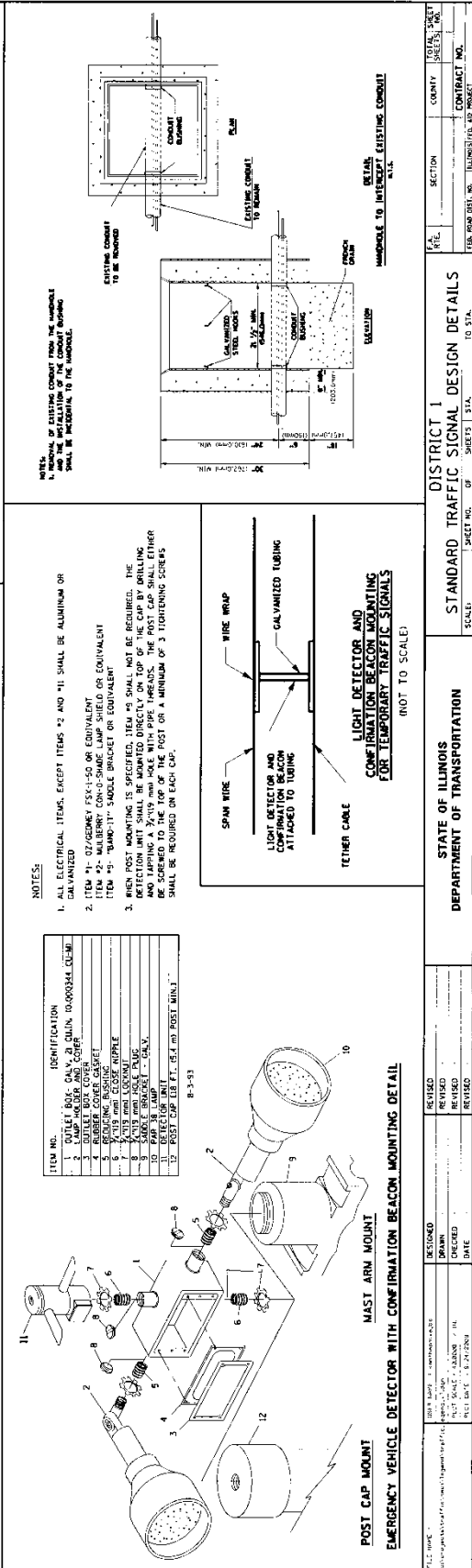
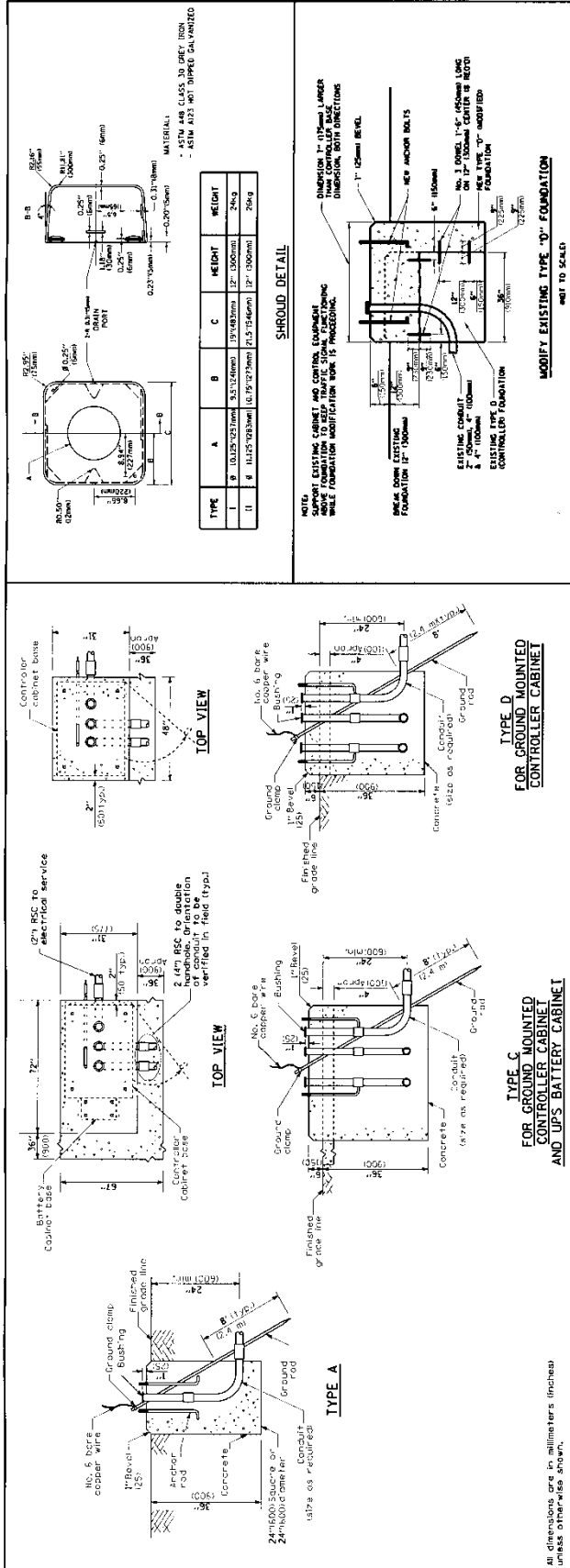
2. Each pedestrian signal LED module shall be fully MUTCD compliant and shall consist of double overlay message combining full LED symbols of an Upraised Hand and a Walking Person. "Egg Crate" type sun shields are not permitted. Numerals shall measure 9 inches (229mm) in height and easily identified from a distance of 120 feet (36.6m).

(d) Electrical

1. Maximum power consumption for LED modules is 29 watts.
2. The measured chromaticity shall remain unchanged over the input line voltage range listed of 80 VAC to 135 VAC.

Basis of Payment. This item shall be paid for at the contract unit price each for PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED, of the type specified, which shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of faces and the method of mounting.

Standard Traffic Signal Design Details



DESIGNED	DATE	REVISIONS	REVISIONS	REVISIONS
BY: [Signature]	11/11/2011	1. [Signature]	2. [Signature]	3. [Signature]
CHECKED	DATE	REVISIONS	REVISIONS	REVISIONS
BY: [Signature]	11/11/2011	1. [Signature]	2. [Signature]	3. [Signature]

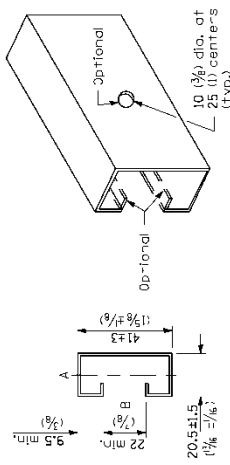
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

DISTRICT 1
 STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: SHEET NO. OF SHEETS IN SET

CONTRACT NO.

Section modulus (in ³ /in ²)	Axis A	Axis B
Steel	819 mm ³ (0.050 in ³)	1720 mm ³ (0.105 in ³)
Aluminum	2458 mm ³ (0.150 in ³)	5162 mm ³ (0.315 in ³)



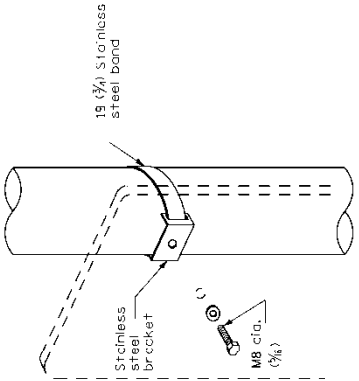
SUPPORTING CHANNEL DETAILS

19 (3/4) stainless steel band

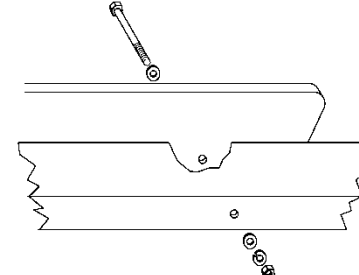
Stainless steel bracket

1/8 dia. (3/16)

Sign panel 900 (36) wide or less



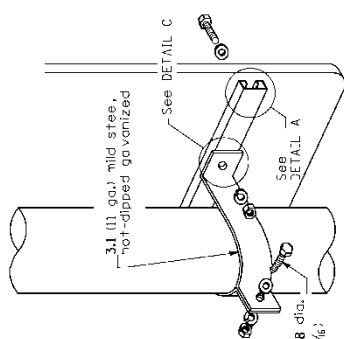
Sign panel 900 (36) wide or less



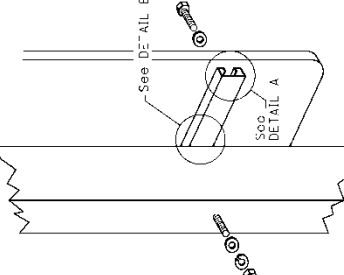
3.1 (1) gal. mild steel, hot-dipped galvanized

1/8 dia. (3/16)

Sign panel over 900 (36) wide

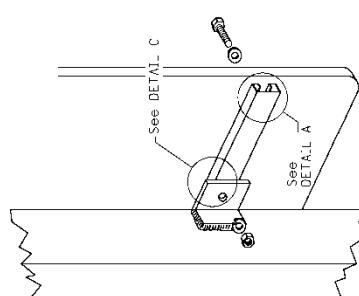


Sign panel over 900 (36) wide



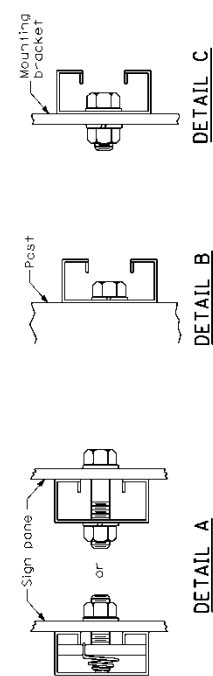
WOOD OR TELESCOPING STEEL POSTS

Sign panel over 900 (36) wide

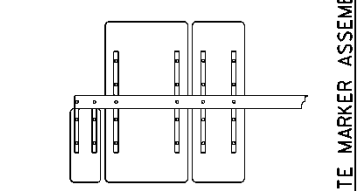


LIGHT OR SIGNAL STANDARDS

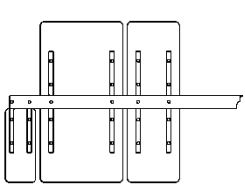
Sign panel over 900 (36) wide



BREAKAWAY STEEL TUBING POSTS
 (All sign panel sizes)



ROUTE MARKER ASSEMBLY



All dimensions are in millimeters (inches) unless otherwise shown.

DATE	REVISIONS
3-1-97	Revised Standard 2319-6.
2-1-95	Moved G. N. to Specs. Added metric.

SIGN PANEL MOUNTING DETAILS

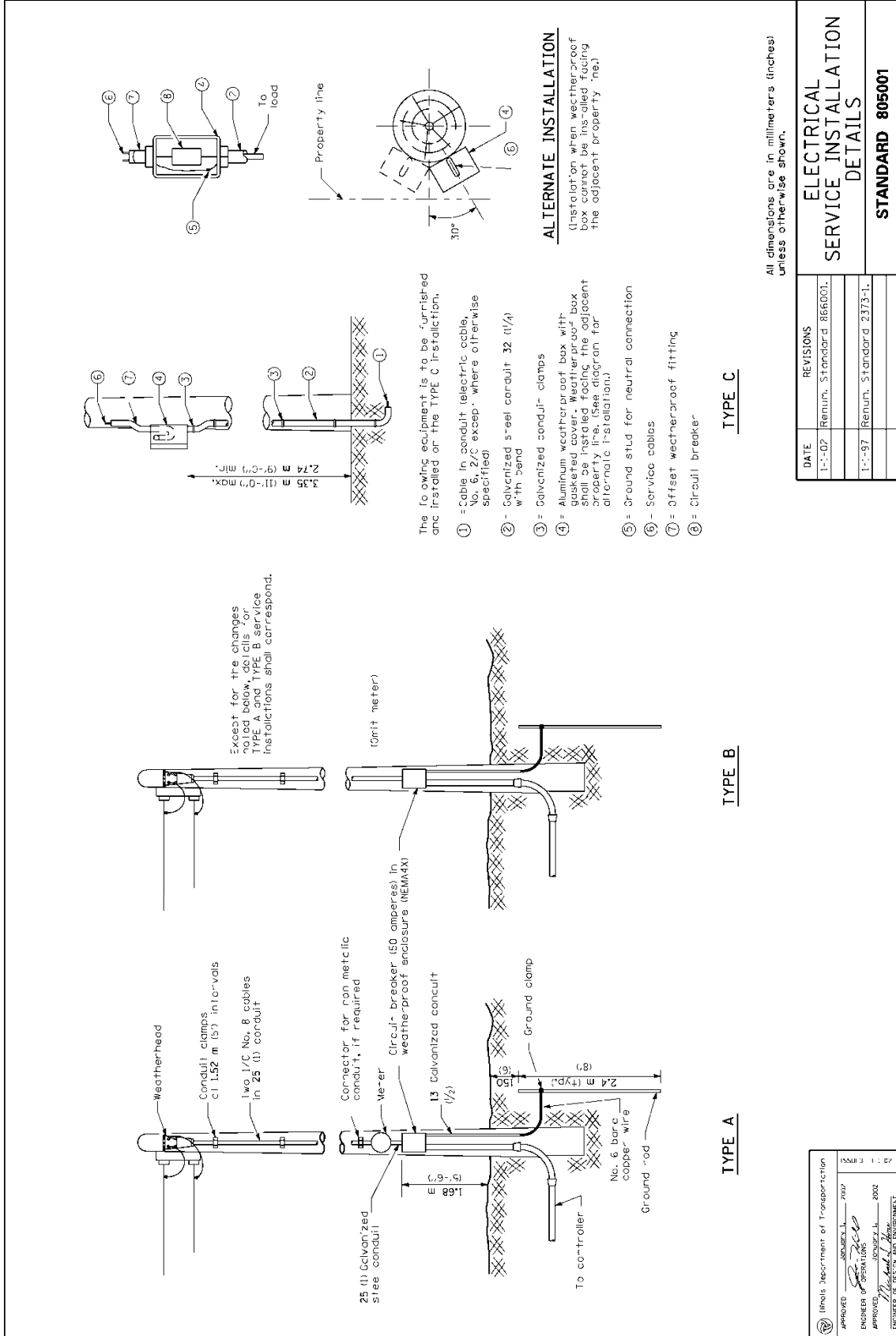
DETAIL A

DETAIL B

DETAIL C

STANDARD 720001

Illinois Department of Transportation
 APPROVED: [Signature] 1997
 ENGINEER OF INFRASTRUCTURE
 APPROVED: [Signature] 1997
 ENGINEER OF DESIGNATED INSTRUMENT



All dimensions are in millimeters (inches) unless otherwise shown.

DATE	REVISIONS
1-1-02	Revised Standard 866001.
1-1-97	Revised Standard 2373-1.

ELECTRICAL SERVICE INSTALLATION DETAILS

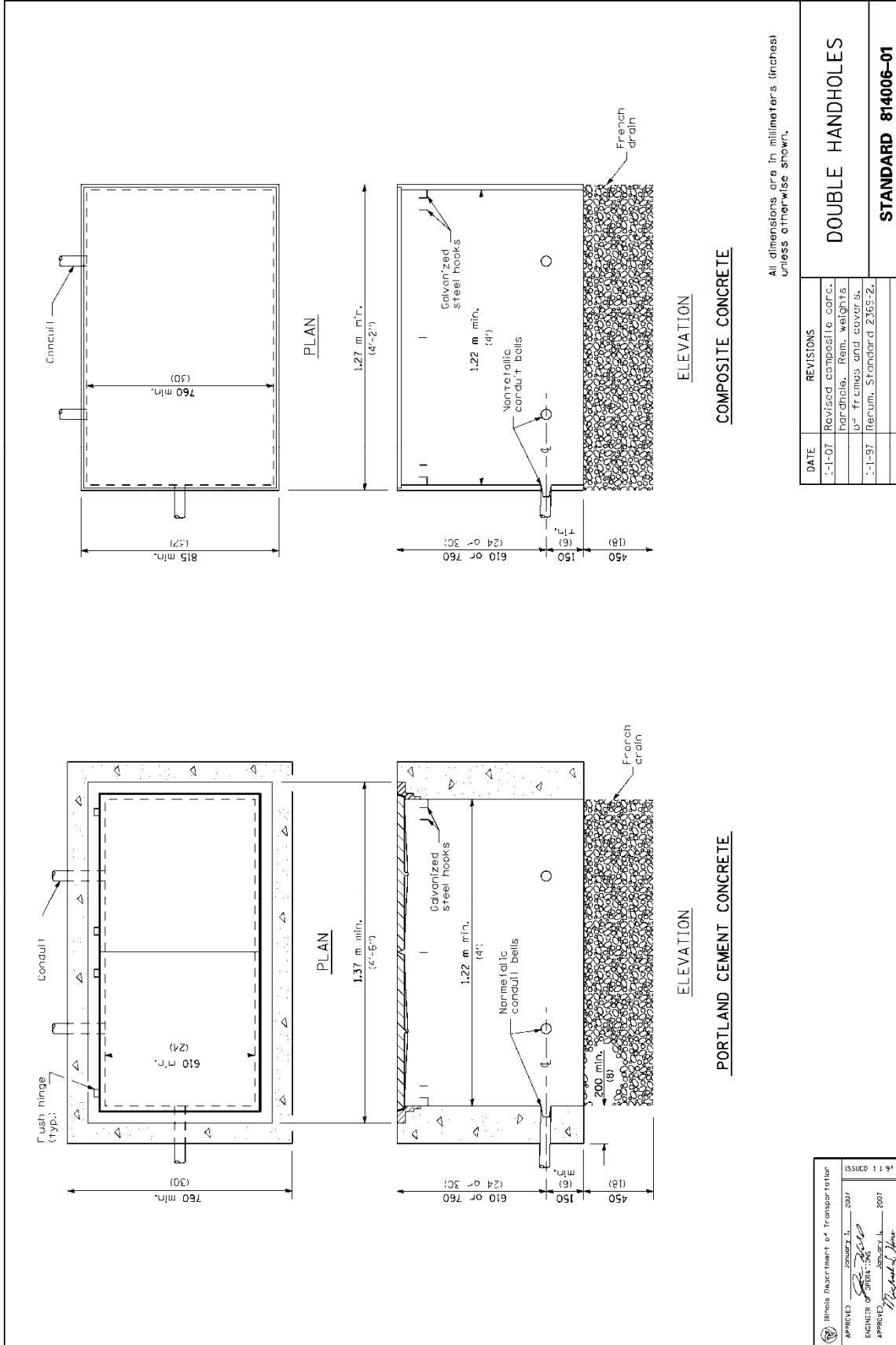
STANDARD 805001

Illinois Department of Transportation

APPROVED: _____ 7/07
 ENGINEER OF OPERATIONS

APPROVED: _____ 8/02
 ENGINEER OF DESIGN AND ENVIRONMENT

SCALE: 1" = 1'-0"



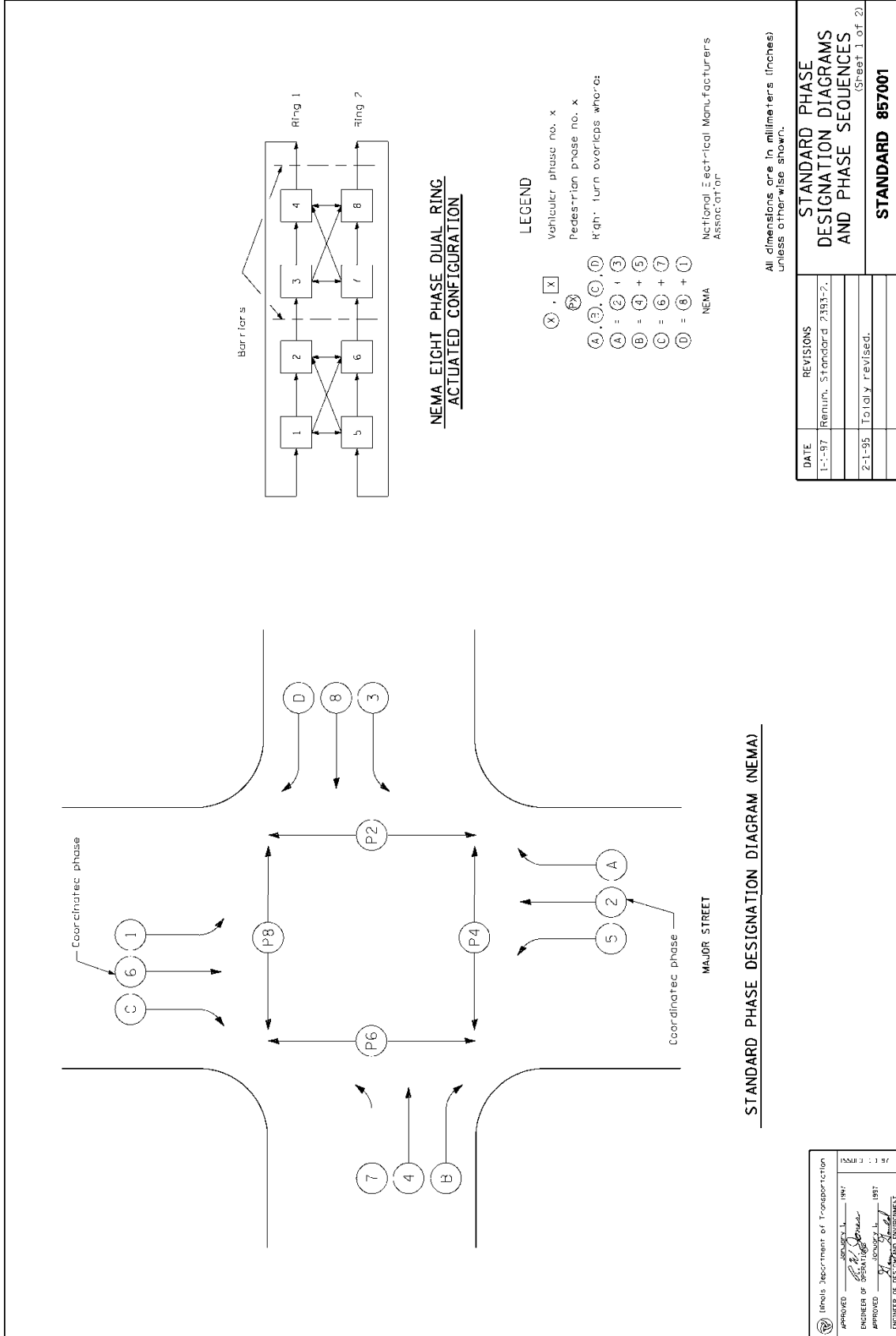
All dimensions are in millimeters (inches) unless otherwise shown.

DATE	REVISIONS
1-1-07	Revised composite concrete handhole. Rem. weights of frames and covers.
1-1-97	Return Standard 2365-2.

DOUBLE HANDHOLES

STANDARD 814006-01

Illinois Department of Transportation	6111 CONSTRUCTION
APPROVED	JANUARY 1, 2007
ENGINEER	APPROVED
APPROVED	APPROVED
ENGINEER OF RECORD	ENGINEER OF RECORD



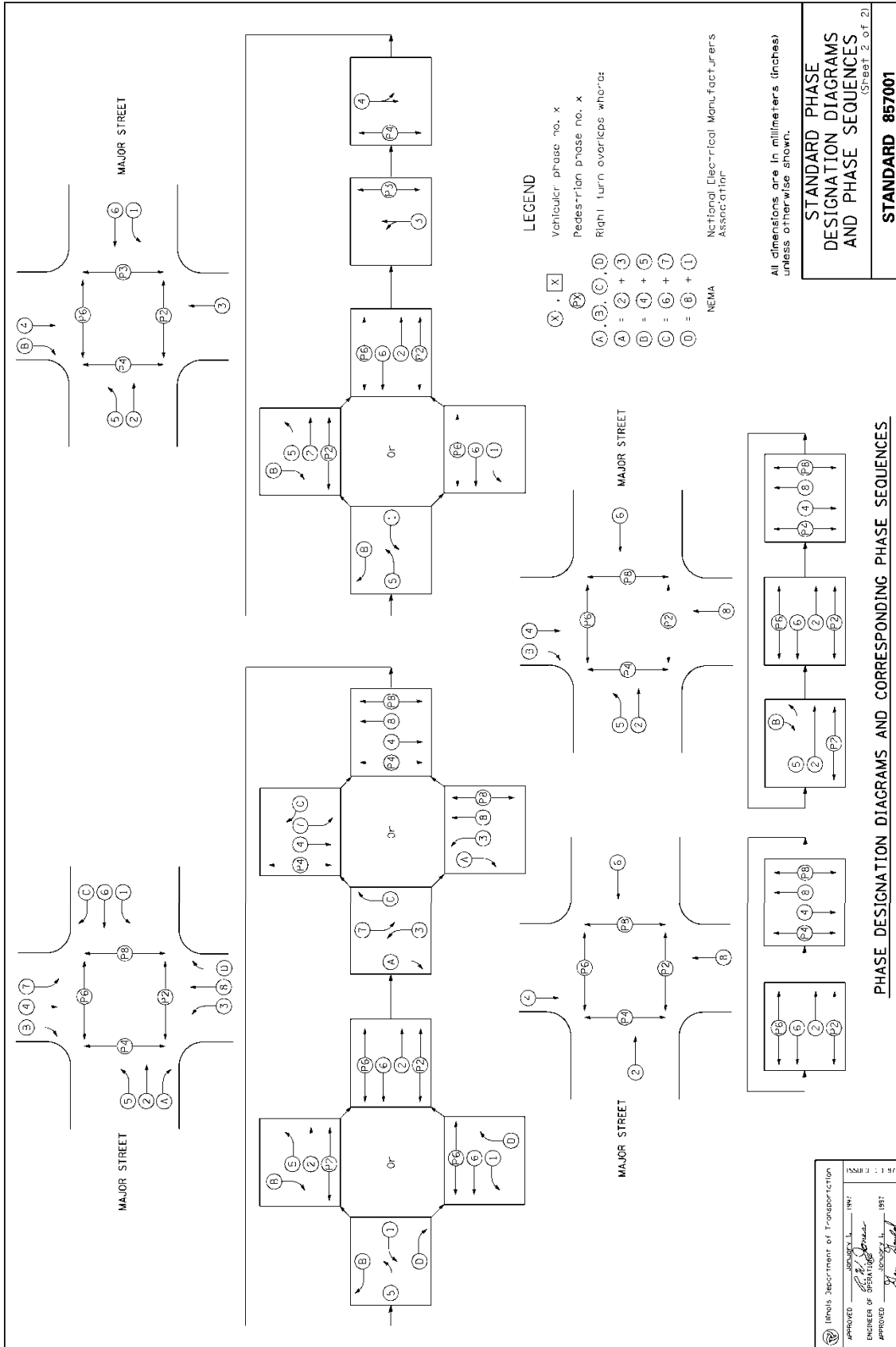
DATE	REVISIONS
1-1-97	Remain. Standard 2393-2.
2-1-95	Totally revised.

STANDARD PHASE DESIGNATION DIAGRAMS AND PHASE SEQUENCES
 (Sheet 1 of 2)

STANDARD 857001

STANDARD PHASE DESIGNATION DIAGRAM (NEMA)

Illinois Department of Transportation
 APPROVED: [Signature] 1997
 ENGINEER OF TRANSPORTATION
 APPROVED: [Signature] 1997
 ENGINEER OF TRANSPORTATION



LEGEND

$\text{X} \cdot \text{X}$ Vehicular phase no. x
 $\text{P} \cdot \text{X}$ Pedestrian phase no. x
 Right turn overlaps when:

A, B, C, D
 A = 2 + 3
 B = 4 + 5
 C = 6 + 7
 D = 8 + 1

NEMA
 National Electrical Manufacturers Association

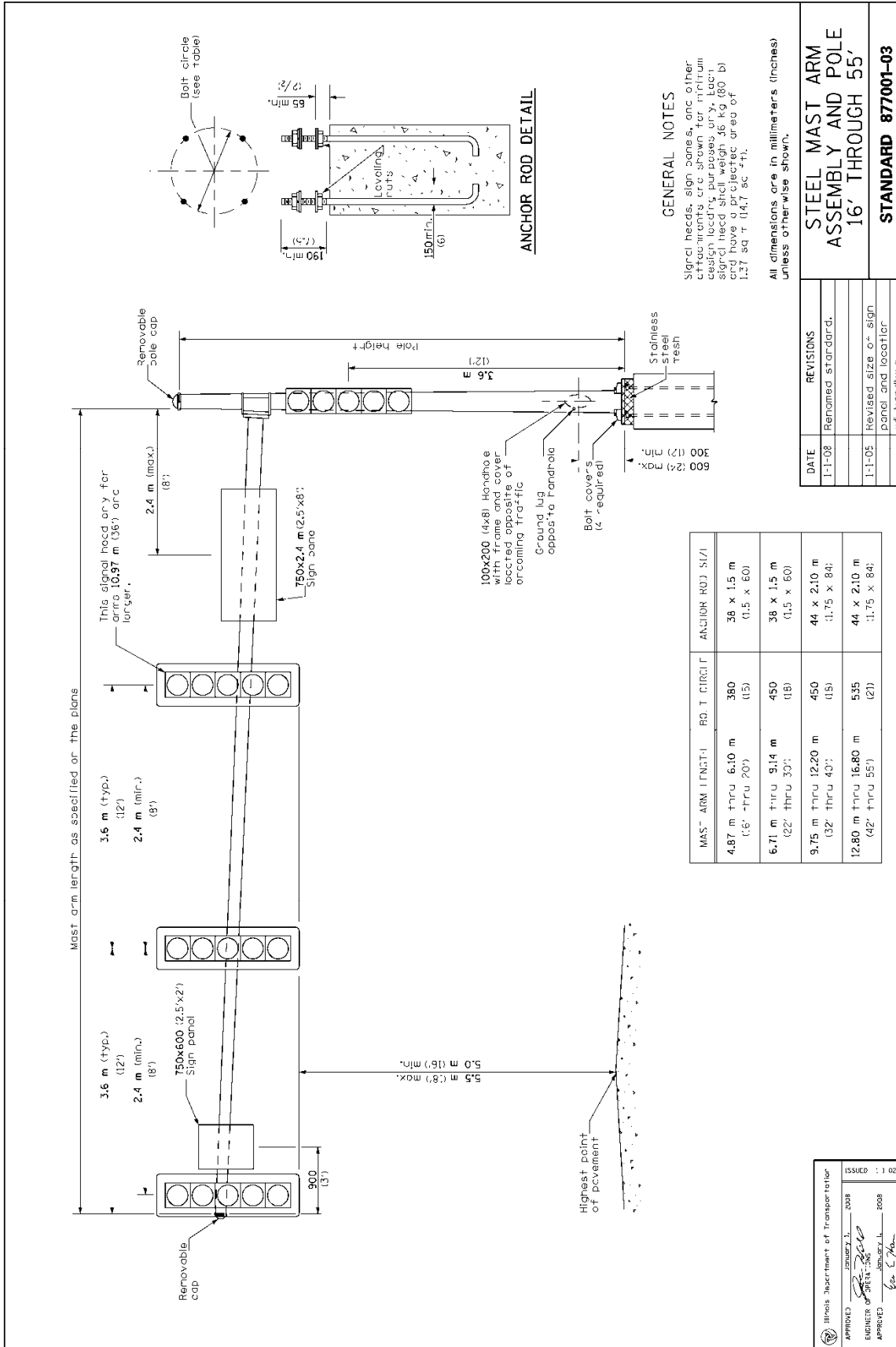
All dimensions are in millimeters (inches) unless otherwise shown.

STANDARD PHASE DESIGNATION DIAGRAMS AND PHASE SEQUENCES
 (Sheet 2 of 2)

STANDARD 857001

PHASE DESIGNATION DIAGRAMS AND CORRESPONDING PHASE SEQUENCES

Illinois Department of Transportation
 APPROVED: [Signature] 1987
 ENGINEER OF SURVEYING
 APPROVED: [Signature] 1987
 ENGINEER OF PROFESSIONAL SURVEYING



GENERAL NOTES

Signal heads, sign panels, and other accessories shall conform to the design located in the project manual. Signal head shall weigh 46 kg (100 lb) and have a projected area of 1.37 sq m (14.7 sq ft).

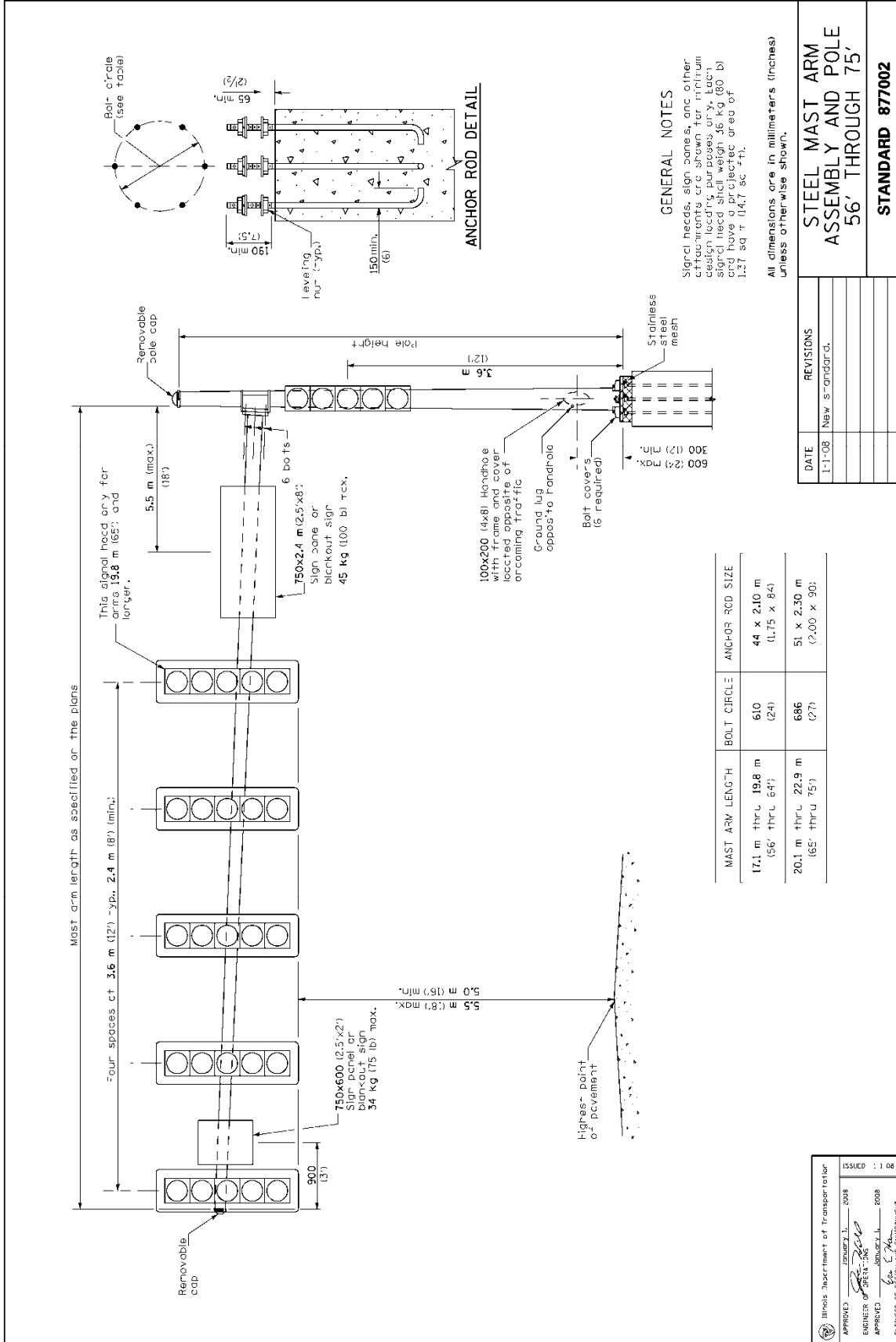
All dimensions are in millimeters (inches) unless otherwise shown.

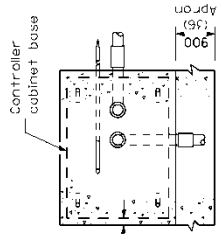
STEEL MAST ARM ASSEMBLY AND POLE 16' THROUGH 55'
STANDARD 877001-03

MAST ARM (FRONT)	BOLT CIRCLE	ANCHOR ROD (S/I)
4.87 m thru 6.10 m (16' thru 20')	380 (15)	38 x 1.5 m (1.5 x 60)
6.71 m thru 9.14 m (22' thru 30')	450 (18)	38 x 1.5 m (1.5 x 60)
9.75 m thru 12.20 m (32' thru 40')	450 (18)	44 x 2.10 m (1.75 x 84)
12.80 m thru 16.80 m (42' thru 55')	535 (21)	44 x 2.10 m (1.75 x 84)

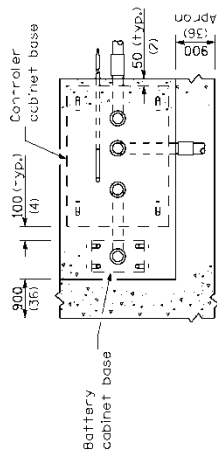
DATE	REVISIONS
1-1-08	Renamed standard.
1-1-05	Revised size of sign panel and locator of handhole.

Illinois Department of Transportation
 APPROVED: January 1, 2008
 ENGINEER: [Signature]
 APPROVED: [Signature]
 ENGINEER OF RECORD: [Signature]
 ISSUED: 1 02

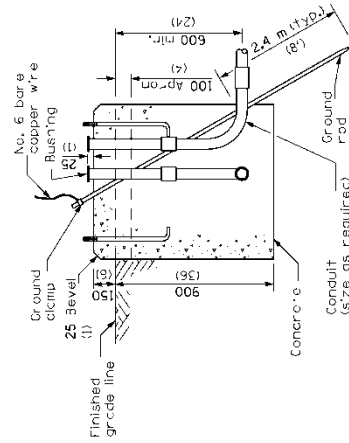




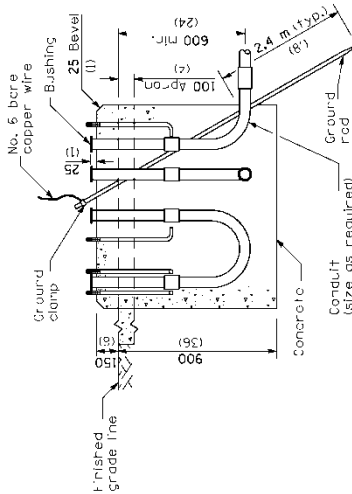
TOP VIEW



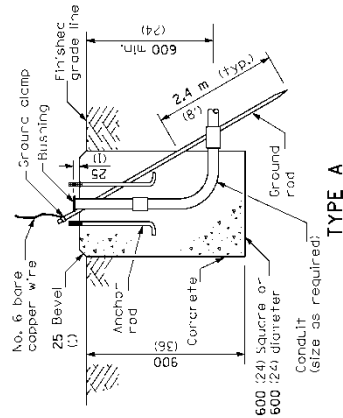
TOP VIEW



TYPE D
FOR GROUND MOUNTED
CONTROLLER CABINET



TYPE C
FOR GROUND MOUNTED
CONTROLLER CABINET
AND UPS BATTERY CABINET



TYPE A

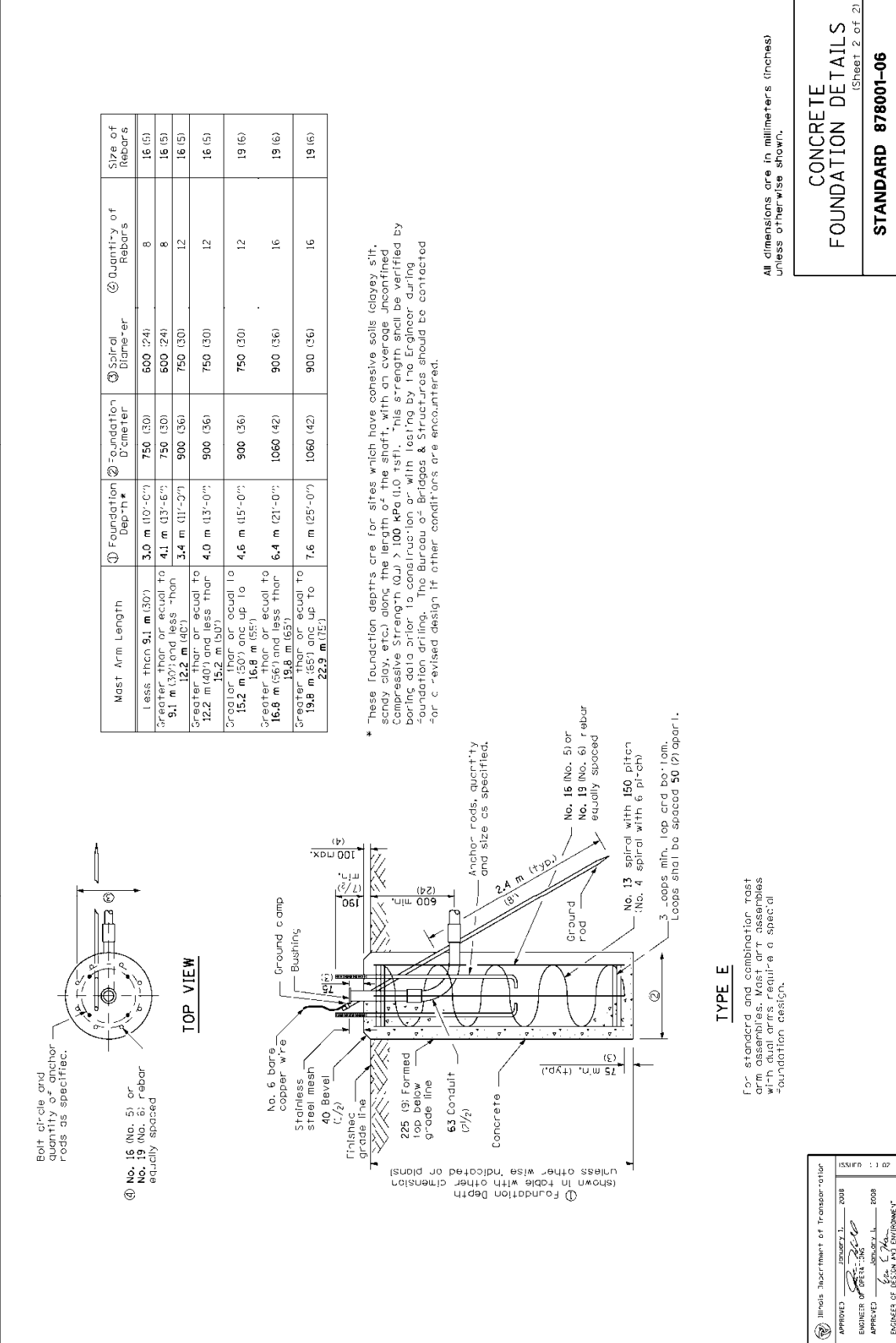
All dimensions are in millimeters (inches) unless otherwise shown.

DATE	REVISIONS
3-1-08	Rev. Type E foundation to support 77.8 m (75') maximum lengths.
3-1-07	Moved pedestrian push button to new Standard 878001-06.

CONCRETE FOUNDATION DETAILS
 (Sheet 1 of 2)

STANDARD 878001-06

Illinois Department of Transportation	ISSUED : 1 02
APPROVED January 1, 2008	
ENGINEER <i>[Signature]</i>	
APPROVED January 1, 2008	
ENGINEER <i>[Signature]</i>	
ENGINEER OF RECORD <i>[Signature]</i>	



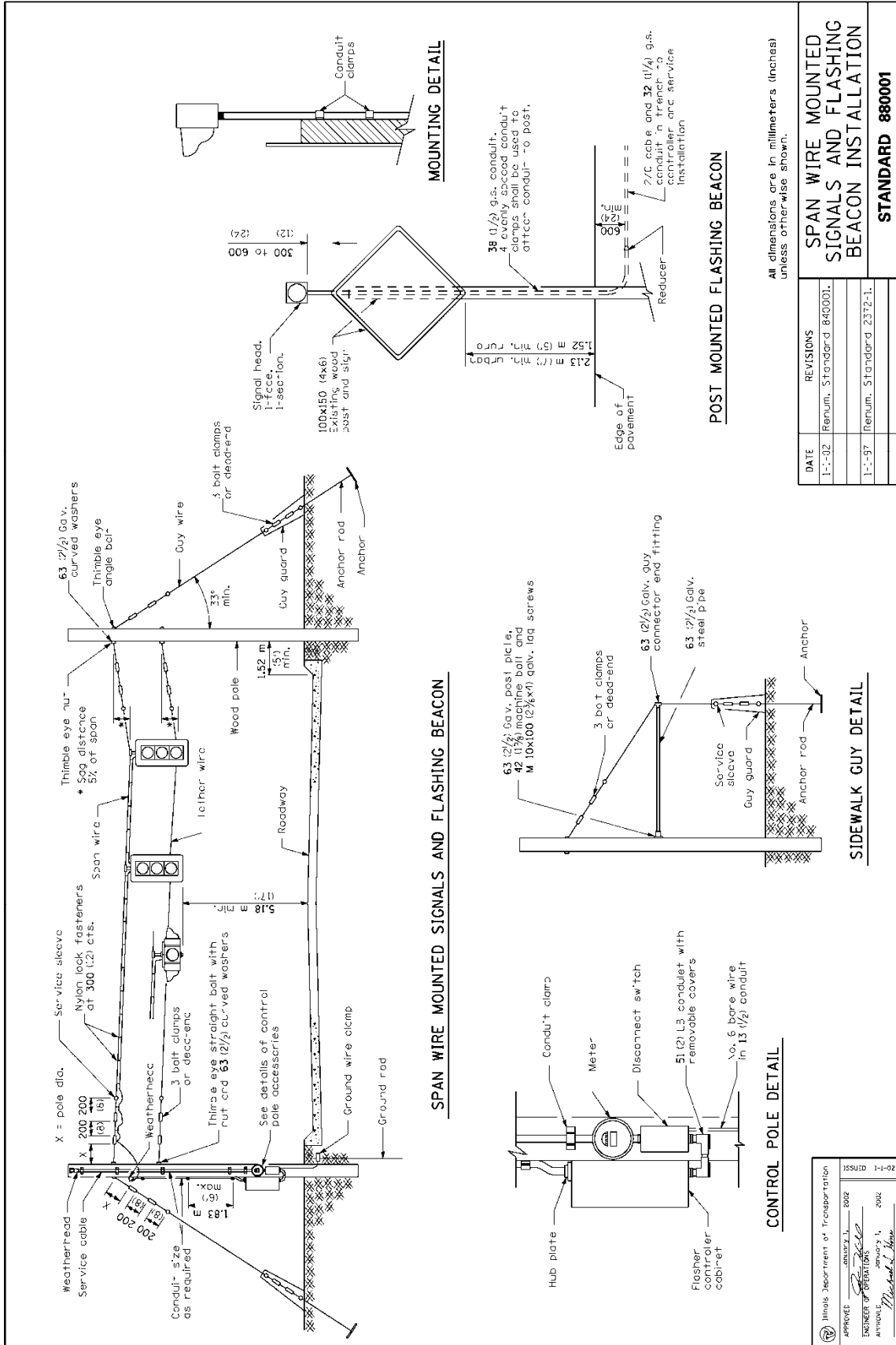
* These foundation depths are for sites which have cohesive soils (clayey silt, sandy clay, etc.) along the length of the shaft, with an average unconfined Compressive Strength (qu) > 100 kPa (1.0 tsf). This strength shall be verified by boring data prior to construction or with testing by the Engineer during foundation drilling. The Bureau of Bridges & Structures should be contacted for a revised design if other conditions are encountered.

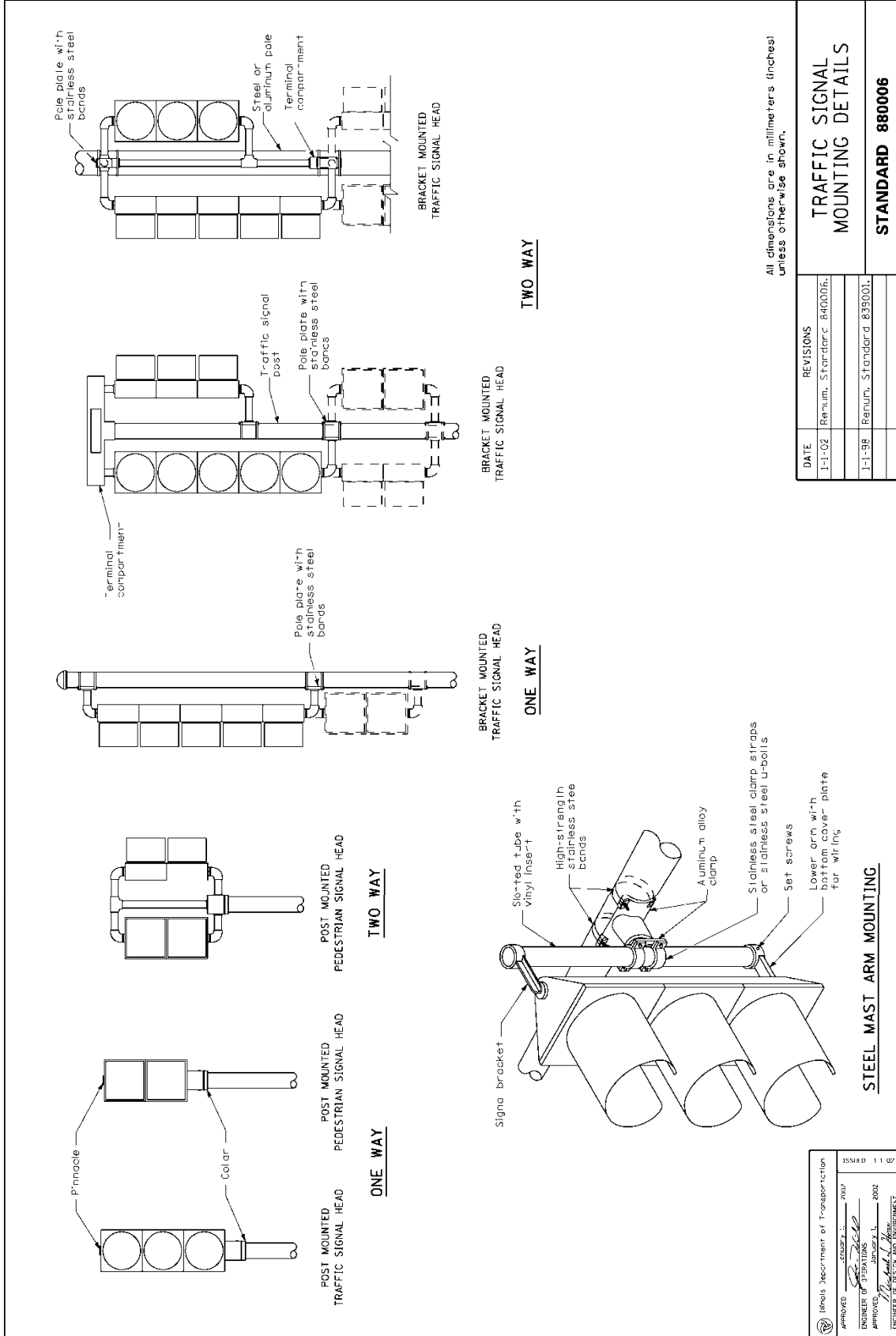
All dimensions are in millimeters (inches) unless otherwise shown.

CONCRETE FOUNDATION DETAILS
(Sheet 2 of 2)

STANDARD 878001-06

Illinois Department of Transportation
APPROVED January 3, 2018
ENGINEER [Signature]
APPROVED [Signature]
ENGINEER OF RECORD [Signature]

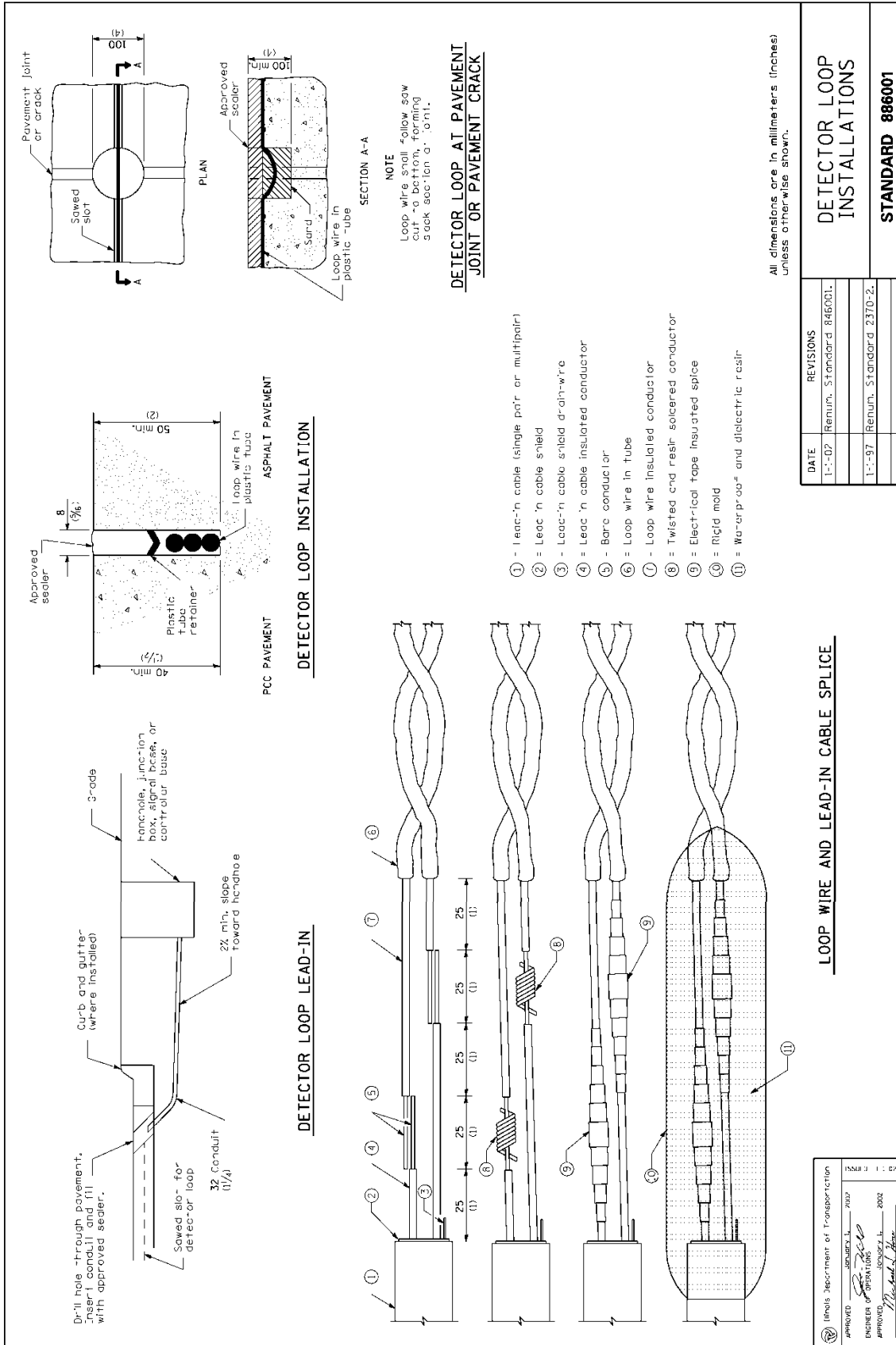




All dimensions are in millimeters (inches) unless otherwise shown.

TRAFFIC SIGNAL MOUNTING DETAILS	
DATE	REVISIONS
1-1-02	Revised Standard 840006.
1-1-98	Revised Standard 839001.
STANDARD 880006	

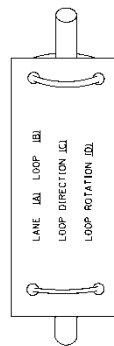
APPROVED	DESIGN	DATE	ISSUED
<i>[Signature]</i>	<i>[Signature]</i>	7/07	11/07
ENGINEER OF DESIGN	ENGINEER OF DESIGN	DATE	
<i>[Signature]</i>	<i>[Signature]</i>	002	
ENGINEER OF DESIGN AND ENVIRONMENT			



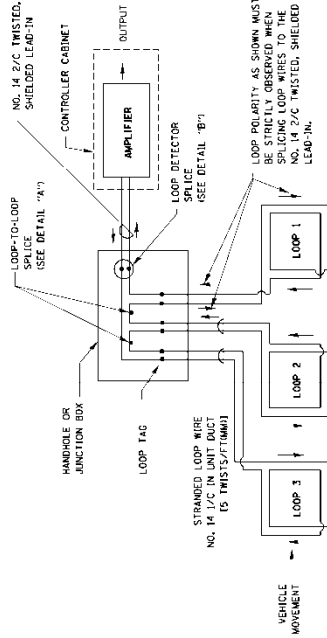
LOOP DETECTOR NOTES

- EACH PAIR OF LOOP WIRES SHALL BE PLACED IN A SEPARATE UNIT DUCT FROM THE EDGE OF PAVEMENT TO THE HANDHOLE. SPACING BETWEEN THE HOLES DRILLED IN THE PAVEMENT SHALL NOT BE LESS THAN 6" (150 mm). UNIT DUCT SHALL BE INCLUDED IN THE COST OF THE LOOP WIRE.
- THE NUMBER OF LOOP TURNS SHALL BE AS RECOMMENDED BY THE AMPLIFIER MANUFACTURER. ALL ADJACENT SIDES OF THE LOOPS SHALL BE INSTALLED IN SUCH A WAY THAT THE CURRENT FLOW IS IN THE SAME DIRECTION TO REINFORCE ITS MAGNETIC FIELDS FOR SMALL VEHICLE DETECTION.
- EACH LOOP LEAD-IN SHALL BE IDENTIFIED AND PERMANENTLY TAGGED IN THE HANDHOLE. EACH LEAD-IN CABLE TAG SHALL INDICATE THE LOCATION OF THE LOOP, LOOP ROTATION (CLOCKWISE/COUNTERCLOCKWISE), LOOP LEAD-IN DIRECTION (IN OR OUT), LOOP CABLE NUMBER AND LOCATION IN CABINET, AND NUMBER OF TURNS IN THE DETECTOR LOOPS IN WATER PROOF INK AS INDICATED ON THE DISTRICT 1 STANDARD TRAFFIC SIGNAL DESIGN DETAIL. THE CONTRACTOR SHALL MARK LOOP LOCATIONS ON RECORD DRAWINGS AND PRESENT TO THE ENGINEER AFTER FINAL INSPECTION. LOOPS SHALL BE MARKED BY LANE AND LOOP NUMBER. SEE DETAIL BELOW.
- ALL LOOP CABLE SHALL BE FASTENED WITH PLASTIC TIE WRAP TO THE HANDHOLE HOOKS.
- IN ASPHALT PAVEMENT, LOOPS SHOULD BE PLACED IN THE BINDER AND DIVERTIBLE MARKED AT THE CURB WITH A SAW-CUT. THE SAW-CUT SHALL BE CUT IN ACCORDANCE WITH LOCAL AND E.P.A. DUST CONTROL REQUIREMENTS. DETECTOR LOOPS SHALL NOT BE INSTALLED IN WET CONDITIONS AND THE SAW-CUTS MUST BE FREE OF DEBRIS AND RESIDUE SUCH AS DUST AND WATER WHICH IS TO BE ACHIEVED BY THE USE OF COMPRESSED AIR, WIRE BRUSHING AND HEAT DRYING ACCORDING TO SEALANT MANUFACTURER REQUIREMENTS. THE DETECTOR WIRE SHALL BE HELD IN PLACE BY THE USE OF FORM WEDGES. WEDGES SHALL BE SPACED NO MORE THAN 18" (450 mm) APART.
- LOOP SPLICES SHALL BE SOLDERED USING A SOLDERING IRON. BLOW TORCHES OR OTHER DEVICES WHICH OXIDIZE COPPER CABLE SHALL NOT BE ALLOWED FOR SOLDERING OPERATIONS. SEE DETAIL BELOW RIGHT.
- PREFORMED DETECTOR LOOPS SHALL BE USED, AS SHOWN ON THE PLANS, WHERE NEW CONCRETE PAVEMENT IS PROPOSED. THE INSTALLATION OF PREFORMED LOOPS SHALL BE IN ACCORDANCE WITH THE DISTRICT 1 SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.

LOOP LEAD-IN CABLE TAG

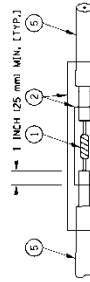


- LANE 1 IS THE LANE CLOSEST TO THE CENTERLINE OF THE ROADWAY
- LOOP #1 IS THE LOOP IN THE LANE CLOSEST TO THE INTERSECTION.
- LABEL LOOP CABLE "IN" OR LOOP CABLE "OUT".
- LABEL LOOP CABLE CLOCKWISE OR LOOP CABLE COUNTERCLOCKWISE.

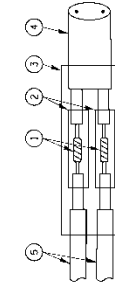


DETECTOR LOOP WIRING SCHEMATIC

- LOOPS SHALL BE SPLICED IN SERIES.
- SAW-CUTS SHALL BE A MINIMUM WIDTH OF 5/16" (8 mm).
- SAW-CUT DEPTHS SHALL BE 3" (75 mm) IF IN CONCRETE. THE SAW-CUT DEPTH SHALL BE TO THE TOP OF THE REINFORCEMENT.
- LOOP CORNERS SHALL BE DRILLED WITH A 2" (50 mm) DIAMETER CORE.



**DETAIL "A"
LOOP-TO-LOOP SPLICE**

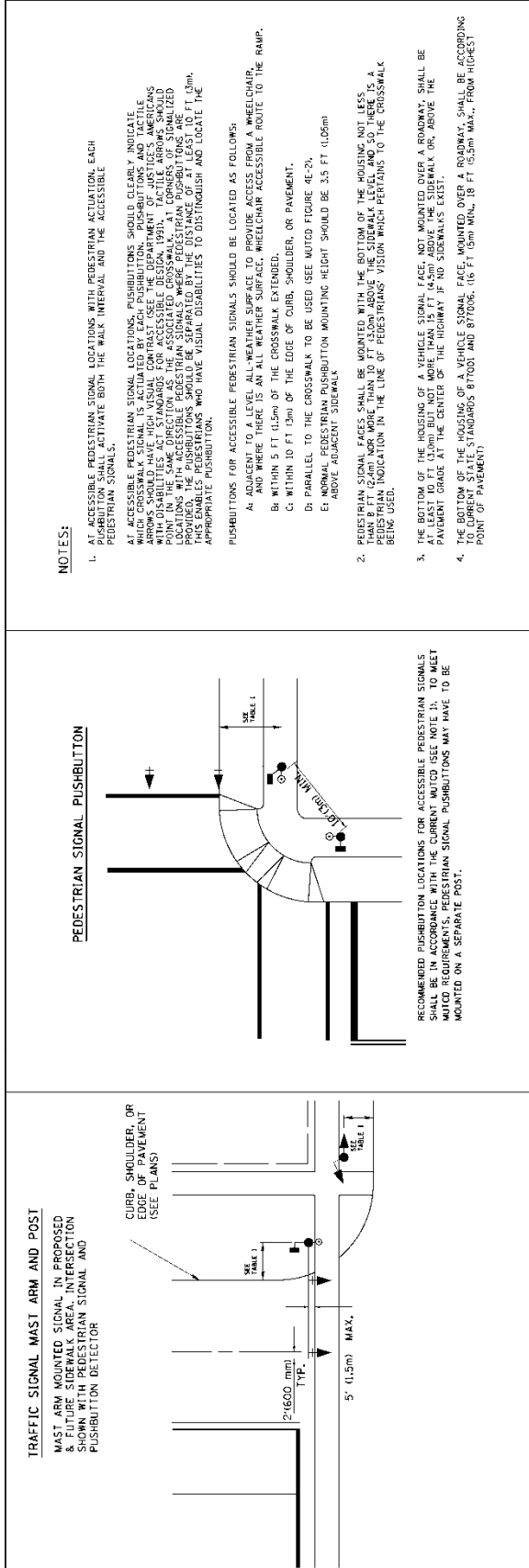


**DETAIL "B"
LOOP-TO-CONTROLLER SPLICE**

LOOP DETECTOR SPLICE

- WESTERN UNION SPLICE SOLDERED WITH ROSIN CORE FLUX. ALL EXPOSED SURFACES OF THE SOLDER SHALL BE SMOOTH.
- WCSM 30/100 HEAT SHRINK TUBE, MINIMUM LENGTH 3" (75 mm), UNDERWATER GRADE.
- WCS 200/750 HEAT SHRINK TUBE, MINIMUM LENGTH 6" (150 mm), UNDERWATER GRADE.
- NO. 14 2/C TWISTED, SHIELDED CABLE.
- LOOP CONDUCTOR WITH FLEXIBLE PLASTIC TUBE.

FILE NAME P:\projects\60L34\60L34.dwg	DESIGNED - BJD DRAWN - BAP CHECKED - B.A.Z. DATE - 05-30-00	REVISED - B12-01 REVISED - BPR, TRAFFIC (10-10-02) REVISED -	DISTRICT ONE		COUNTY	SHEET NO.
			STANDARD TRAFFIC SIGNAL DESIGN DETAILS			
STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION			SECTION	TRAFFIC	CONTRACT NO.	
SCALE: NONE			SHEET NO. 1 OF 4	SHEETS	TO STA.	



NOTES:

- AT ACCESSIBLE PEDESTRIAN SIGNAL LOCATIONS WITH PEDESTRIAN ACTUATION, EACH PEDESTRIAN SIGNAL SHALL BE ACTIVATED BOTH BY THE WALK INTERVAL AND THE ACCESSIBLE PEDESTRIAN SIGNAL.
- ACCESSIBLE PEDESTRIAN SIGNALS, LOCATIONS, PUSHBUTTONS SHOULD CLEARLY INDICATE WHICH CROSSWALK SIGNAL IS ACTIVATED BY EACH PUSHBUTTON, PUSHBUTTONS AND TACTILE ARROWS SHOULD HAVE HIGH VISUAL CONTRAST (SEE THE DEPARTMENT OF JUSTICE'S AMERICANS WITH DISABILITIES ACT REQUIREMENTS FOR TACTILE ARROWS). TACTILE ARROWS SHOULD POINT IN THE SAME DIRECTION AS THE ASSOCIATED CROSSWALK. ALL CORNERS OF SIGNALIZED LOCATIONS WITH ACCESSIBLE PEDESTRIAN SIGNALS WHERE PEDESTRIAN PUSHBUTTONS ARE LOCATED SHOULD BE SIGNALIZED WITH TACTILE ARROWS. TACTILE ARROWS SHOULD BE 18 INCHES (457 MM) HIGH. THIS ENABLES PEDESTRIANS WHO HAVE VISUAL DISABILITIES TO DISTINGUISH AND LOCATE THE APPROPRIATE PUSHBUTTON.
- PUSHBUTTONS FOR ACCESSIBLE PEDESTRIAN SIGNALS SHOULD BE LOCATED AS FOLLOWS:
 - ADJACENT TO THE CURB, WITHIN 5 FT (1.5m) OF THE CROSSWALK EXTENSION.
 - WITHIN 5 FT (1.5m) OF THE CROSSWALK EXTENSION.
 - WITHIN 10 FT (3m) OF THE EDGE OF CURB, SHOULDER, OR PAVEMENT.
 - PARALLEL TO THE CROSSWALK TO BE USED (SEE MUTCD FIGURE 4E-2).
 - NORMAL PEDESTRIAN PUSHBUTTON MOUNTING HEIGHT SHOULD BE 3.5 FT (1.05m) ABOVE ADJACENT SIDEWALK.
- PEDESTRIAN SIGNAL FACES SHALL BE MOUNTED WITH THE BOTTOM OF THE HOUSING NOT LESS THAN 8 FT (2.4m) NOR MORE THAN 10 FT (3.0m) ABOVE THE SIDEWALK LEVEL, AND SO THERE IS A BEING VISUAL INDICATION IN THE LINE OF PEDESTRIANS' VISION WHICH PERTAINS TO THE CROSSWALK BEING USED.
- THE BOTTOM OF THE HOUSING OF A VEHICLE SIGNAL FACE, NOT MOUNTED OVER A ROADWAY, SHALL BE AT LEAST 10 FT (3.0m) BUT NOT MORE THAN 15 FT (4.5m) ABOVE THE SIDEWALK OR, ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE HIGHWAY IF NO SIDEWALKS EXIST.
- THE BOTTOM OF THE HOUSING OF A VEHICLE SIGNAL FACE, MOUNTED OVER A ROADWAY, SHALL BE ACCORDING TO CURRENT STATE STANDARDS 877001 AND 877006. (16 FT (5m) MIN., 18 FT (5.5m) MAX., FROM HIGHEST POINT OF PAVEMENT.)

TABLE I

TRAFFIC SIGNAL EQUIPMENT	COMBINATION CONCRETE CURB AND CUTTER (MIN. DIST. FROM BACK OF CURB)	SHOULDER/NON-CURBED AREA (MIN. DIST. FROM EDGE OF PAVEMENT)
TRAFFIC SIGNAL MAST ARM POLE	6 FT (1.8m)	SHOULDER WIDTH + 2 FT (0.6m), MINIMUM 10 FT (3.0m)
TRAFFIC SIGNAL POST	4 FT (1.2m)	SHOULDER WIDTH + 2 FT (0.6m), MINIMUM 10 FT (3.0m)
PEDESTRIAN SIGNAL POST	4 FT (1.2m)	SHOULDER WIDTH + 2 FT (0.6m), MINIMUM 10 FT (3.0m)
PEDESTRIAN PUSHBUTTON	SEE NOTE 1	SEE NOTE 1

FILE NAME: \projects\2010-053-J\2010-053-J.dwg
 USER: jgibson
 DATE: 11/11/2009 11:14:29 AM
 PLOT SCALE: 1/8" = 1'-0"
 CHECKED: J.GIBSON
 DESIGNED: J.GIBSON
 REVISIONS: NONE

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
 STANDARD TRAFFIC SIGNAL DESIGN DETAILS
 SHEET NO. 2 OF 4 SHEETS 1 STA. TO STA.

SCALE: NONE

SECTION: TR-4E
 COUNTY: ILLINOIS
 CONTRACT NO.: 60L34

SECTION 3 – LIST OF LOCATIONS

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
1	AIEV1	I-94	S of Lawrence Ave	Cook	Chevron Sign	A-1a
2	AIEV2	I-94	S of Lawrence Ave	Cook	Chevron Sign	A-1a
3	AIEV3	I-94	S of Lawrence Ave	Cook	Chevron Sign	A-1a
4	AISV1	I-90/94	S of Kedzie Ave	Cook	Chevron Sign	A-1a
5	AISV2	I-90/94	S of Kedzie Ave	Cook	Chevron Sign	A-1a
6	AISV3	I-90/94	S of Kedzie Ave	Cook	Chevron Sign	A-1a
7	AIWV1	I-90	N of Montrose Ave	Cook	Chevron Sign	A-1a
8	AIWV2	I-90	N of Montrose Ave	Cook	Chevron Sign	A-1a
9	AIWV4	I-90	N of Montrose Ave	Cook	Chevron Sign	A-1a
11	AIWV5	I-90	S of Montrose Ave	Cook	Chevron Sign	A-1a
12	AOMV1	I-90/94	S of Grand Ave	Cook	Chevron Sign	A-1a
13	AOMV2	I-90/94	S of Grand Ave	Cook	Chevron Sign	A-1a
14	AOMV3	I-90/94	S of Grand Ave	Cook	Chevron Sign	A-1a
15	AOMV4	I-90/94	S of Grand Ave	Cook	Chevron Sign	A-1a
16	AOOV1	I-90/94	Milwaukee Ave	Cook	Chevron Sign	A-1a
17	AOOV2	I-90/94	Milwaukee Ave	Cook	Chevron Sign	A-1a
18	AOOV3	I-90/94	W of Milwaukee Ave	Cook	Chevron Sign	A-1a
19	AOSV1	I-90/94	N of Logan Blvd	Cook	Chevron Sign	A-1a
20	AOSV2	I-90/94	N of Logan Blvd	Cook	Chevron Sign	A-1a
21	AOSV3	I-90/94	N of Logan Blvd	Cook	Chevron Sign	A-1a
22	AIEAS1	I-94	N of Lawrence Ave	Cook	Aux Sign	A-1a
23	AIEAS2	I-94	S of Lawrence Ave	Cook	Aux Sign	A-1a
24	AISAS1	I-90/94	S of Kedzie Ave	Cook	Aux Sign	A-1a
25	AISAS2	I-90/94	S of Kedzie Ave	Cook	Aux Sign	A-1a
26	AIWAS1	I-90	W of Cicero Ave	Cook	Aux Sign	A-1a
27	AIWAS2	I-90	Cicero Ave	Cook	Aux Sign	A-1a
28	AOMAS1	I-90/94	S of Grand Ave	Cook	Aux Sign	A-1a
29	AOMAS2	I-90/94	S of Grand Ave	Cook	Aux Sign	A-1a
30	AOMAS3	I-90/94	S of Grand Ave	Cook	Aux Sign	A-1a
31	AOOAS1	I-90/94	E of Milwaukee Ave	Cook	Aux Sign	A-1a
32	AOOAS2	I-90/94	E of Milwaukee Ave	Cook	Aux Sign	A-1a
33	AOOAS3	I-90/94	E of Milwaukee Ave	Cook	Aux Sign	A-1a
34	AOSAS1	I-90/94	N of Logan Blvd	Cook	Aux Sign	A-1a
35	AOSAS2	I-90/94	N of Logan Blvd	Cook	Aux Sign	A-1a
36	AOMCM1	I-90/94	NW of Fulton St	Cook	Changeable Message Sign	A-1a
37	AOMCM2	I-90/94	SE of Green St	Cook	Changeable Message Sign	A-1a
38	AOOCM3	Ontario St	Kennedy Split	Cook	Changeable Message Sign	A-1a
39	AOOCM4	Ontario St	E of Kennedy Split	Cook	Changeable Message Sign	A-1a
40	AOOCM5	Ontario St	Chicago River	Cook	Changeable Message Sign	A-1a
41	AOMCM6	I-90/94	SE of Grand Ave	Cook	Changeable Message Sign	A-1a
42	AOMCM7	I-90/94	NE of Ohio St	Cook	Changeable Message Sign	A-1a
43	AOSCM8	I-90/94	Fullerton Ave	Cook	Changeable Message Sign	A-1a
44	AOSCM9	I-90/94	S of Diveresy Ave	Cook	Changeable Message Sign	A-1a
45	AISCM10	I-90/94	Sacramento Ave	Cook	Changeable Message Sign	A-1a
46	AISCM11	I-90/94	Kimball Ave	Cook	Changeable Message Sign	A-1a
47	AIECM12	I-94	S of Lawrence Ave	Cook	Changeable Message Sign	A-1a
48	AIECM13	I-94	Foster Ave	Cook	Changeable Message Sign	A-1a

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
49	AIWCM14	I-90	S of Lawrence Ave	Cook	Changeable Message Sign	A-1a
50	AIWCM15	I-90	N of Montrose Ave	Cook	Changeable Message Sign	A-1a
51	AIEG1	I-94	N of Wilson Ave	Cook	Gore Sign	A-1a
52	AISG1	I-90/94	S of Kedzie Ave	Cook	Gore Sign	A-1a
53	AIWG1	I-90	N of Montrose Ave	Cook	Gore Sign	A-1a
54	AOMG1	I-90/94	S of Ogden Ave	Cook	Gore Sign	A-1a
55	AOOG1	I-90/94	W of Milwaukee Ave	Cook	Gore Sign	A-1a
56	AOSG1	I-90/94	N of Logan Blvd	Cook	Gore Sign	A-1a
57	AIEX1	I-94	S of Wilson Ave	Cook	Barrier "X" Sign	A-1a
58	AISX1	I-90/94	S of Kedzie Ave	Cook	Barrier "X" Sign	A-1a
59	AIWX1	I-90	N of Montrose Ave	Cook	Barrier "X" Sign	A-1a
60	AOMX1	I-90/94	N of Grand Ave	Cook	Barrier "X" Sign	A-1a
61	AOOX1	I-90/94	W of Milwaukee Ave	Cook	Barrier "X" Sign	A-1a
62	AOSX1	I-90/94	S of Diversey Ave	Cook	Barrier "X" Sign	A-1a
63	AIE1	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
64	AIE2	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
65	AIE3	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
66	AIE4	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
67	AIE5	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
68	AIE6	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
69	AIE7	I-94	S of Lawrence Ave	Cook	Swing Gate	A-1a
70	AIE8	I-94	N of Wilson Ave	Cook	Swing Gate	A-1a
71	AIE9	I-94	N of Wilson Ave	Cook	Swing Gate	A-1a
72	AIE10	I-94	N of Wilson Ave	Cook	Swing Gate	A-1a
73	AIE11	I-94	N of Wilson Ave	Cook	Swing Gate	A-1a
74	AIE12	I-94	S of Wilson Ave	Cook	Swing Gate	A-1a
75	AIE13	I-94	S of Wilson Ave	Cook	Swing Gate	A-1a
76	AIE14	I-94	S of Wilson Ave	Cook	Swing Gate	A-1a
77	AIE15	I-94	S of Wilson Ave	Cook	Swing Gate	A-1a
78	AIS1	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
79	AIS2	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
80	AIS3	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
81	AIS4	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
82	AIS5	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
83	AIS6	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
84	AIS7	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
85	AIS8	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
86	AIS9	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
87	AIS10	I-90/94	N of Sacramento Ave	Cook	Swing Gate	A-1a
88	AIS11	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
89	AIS12	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
90	AIS13	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
91	AIS14	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
92	AIS15	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
93	AIS16	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
94	AIS17	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
95	AIS18	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
96	AIS19	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
97	AIS20	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
98	AIS21	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
99	AIS22	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
100	AIS23	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
101	AIS24	I-90/94	S of Kedzie Ave	Cook	Swing Gate	A-1a
102	AIW1	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
103	AIW2	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
104	AIW3	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
105	AIW4	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
106	AIW5	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
107	AIW6	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
108	AIW7	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
109	AIW8	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
110	AIW9	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
111	AIW10	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
112	AIW11	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
113	AIW12	I-90	N of Montrose Ave	Cook	Swing Gate	A-1a
114	AIW13	I-90	Montrose Ave	Cook	Swing Gate	A-1a
115	AIW14	I-90	Montrose Ave	Cook	Swing Gate	A-1a
116	AIW15	I-90	S of Montrose Ave	Cook	Swing Gate	A-1a
117	AIW16	I-90	S of Montrose Ave	Cook	Swing Gate	A-1a
118	AIW17	I-90	S of Montrose Ave	Cook	Swing Gate	A-1a
119	AIW18	I-90	S of Montrose Ave	Cook	Swing Gate	A-1a
120	AIW19	I-90	S of Montrose Ave	Cook	Swing Gate	A-1a
121	AIW20	I-90	S of Montrose Ave	Cook	Swing Gate	A-1a
122	AOM1	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
123	AOM2	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
124	AOM3	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
125	AOM4	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
126	AOM5	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
127	AOM6	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
128	AOM7	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
129	AOM8	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
130	AOM9	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
131	AOM10	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
132	AOM11	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
133	AOM12	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
134	AOM13	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
135	AOM14	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
136	AOM15	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
137	AOM16	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
138	AOM17	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
139	AOM18	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
140	AOM19	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
141	AOM20	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a
142	AOM21	I-90/94	S of Grand Ave	Cook	Swing Gate	A-1a

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
143	AOO1	I-90/94	E of Milwaukee Ave	Cook	Swing Gate	A-1a
144	AOO2	I-90/94	Milwaukee Ave	Cook	Swing Gate	A-1a
145	AOO3	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
146	AOO4	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
147	AOO5	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
148	AOO6	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
149	AOO7	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
150	AOO8	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
151	AOO9	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
152	AOO10	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
153	AOO11	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
154	AOO12	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
155	AOO13	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
156	AOO14	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
157	AOO15	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
158	AOO16	I-90/94	W of Milwaukee Ave	Cook	Swing Gate	A-1a
159	AOS1	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
160	AOS2	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
161	AOS3	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
162	AOS4	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
163	AOS5	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
164	AOS6	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
165	AOS7	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
166	AOS8	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
167	AOS9	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
168	AOS10	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
169	AOS11	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
170	AOS12	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
171	AOS13	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
172	AOS14	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
173	AOS15	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
174	AOS16	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
175	AOS17	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
176	AOS18	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
177	AOS19	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
178	AOS20	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
179	AOS21	I-90/94	N of Logan Blvd	Cook	Swing Gate	A-1a
180	AIECC1	I-94	S of Lawrence Ave	Cook	OP Camera	A-1a
181	AIECC2	I-94	S of Lawrence Ave	Cook	OP Camera	A-1a
182	AIECC3	I-94	S of Lawrence Ave	Cook	OP Camera	A-1a
183	AIECC4	I-94	S of Lawrence Ave	Cook	OP Camera	A-1a
184	AIECC5	I-94	S of Wilson Ave	Cook	OP Camera	A-1a
185	AIECC6	I-94	S of Wilson Ave	Cook	OP Camera	A-1a
186	AISCC1	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
187	AISCC2	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
188	AISCC3	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
189	AISCC4	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
190	AISCC5	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
191	AISCC6	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
192	AISCC7	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
193	AISCC8	I-90/94	N of Sacramento Ave	Cook	OP Camera	A-1a
194	AIWCC1	I-90/94	Cicero Ave	Cook	OP Camera	A-1a
195	AIWCC2	I-90	S of Cicero Ave	Cook	OP Camera	A-1a
196	AIWCC3	I-90	N of Montrose Ave	Cook	OP Camera	A-1a
197	AIWCC4	I-90	N of Montrose Ave	Cook	OP Camera	A-1a
198	AIWCC5	I-90	N of Montrose Ave	Cook	OP Camera	A-1a
199	AIWCC6	I-90	S of Montrose Ave	Cook	OP Camera	A-1a
200	AIWCC7	I-90	S of Montrose Ave	Cook	OP Camera	A-1a
201	AOMCC1	I-90/94	N of Grand Ave	Cook	OP Camera	A-1a
202	AOMCC2	I-90/94	N of Grand Ave	Cook	OP Camera	A-1a
203	AOMCC3	I-90/94	S of Ogden Ave	Cook	OP Camera	A-1a
204	AOMCC4	I-90/94	N of Grand Ave	Cook	OP Camera	A-1a
205	AOMCC5	I-90/94	S of Ogden Ave	Cook	OP Camera	A-1a
206	AOMCC6	I-90/94	S of Ogden Ave	Cook	OP Camera	A-1a
207	AOMCC7	I-90/94	S of Ogden Ave	Cook	OP Camera	A-1a
208	AOOCC1	I-90/94	W of Milwaukee Ave	Cook	OP Camera	A-1a
209	AOOCC2	I-90/94	W of Milwaukee Ave	Cook	OP Camera	A-1a
210	AOOCC3	I-90/94	E of Milwaukee Ave	Cook	OP Camera	A-1a
211	AOOCC4	I-90/94	E of Milwaukee Ave	Cook	OP Camera	A-1a
212	AOOCC5	I-90/94	E of Milwaukee Ave	Cook	OP Camera	A-1a
213	AOOCC6	I-90/94	E of Milwaukee Ave	Cook	OP Camera	A-1a
214	AOSCC1	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
215	AOSCC2	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
216	AOSCC3	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
217	AOSCC4	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
218	AOSCC5	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
219	AOSCC6	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
220	AOSCC7	I-90/94	S of Diversey Ave	Cook	OP Camera	A-1a
221	AIEB1	I-94	N of Wilson Ave	Cook	28.00' Barrier	A-1a
222	AISB1	I-90/94	N of Sacramento Ave	Cook	36.21' Barrier	A-1a
223	AIWB1	I-90	N of Montrose Ave	Cook	28.94' Barrier	A-1a
224	AOMB1	I-90	N of Grand Ave	Cook	22.27' Barrier	A-1a
225	AOOB1	I-90/94	W of Milwaukee Ave	Cook	28.00' Barrier	A-1a
226	AOSB1	I-90/94	S of Diversey Ave	Cook	38.25' Barrier	A-1a
227	AIER1	I-94	Foster Ave	Cook	Roadside Control Panel	A-1a
228	AIER2	I-94	N of Wilson Ave	Cook	Roadside Control Panel	A-1a
229	AIER3	I-94	S of Lawrence Ave	Cook	Roadside Control Panel	A-1a
230	AISR1	I-90/94	S of Kedzie Ave	Cook	Roadside Control Panel	A-1a
231	AISR2	I-90/94	S of Kedzie Ave	Cook	Roadside Control Panel	A-1a
232	AISR3	I-90/94	S of Kedzie Ave	Cook	Roadside Control Panel	A-1a
233	AIWR1	I-90	S of Lawrence Ave	Cook	Roadside Control Panel	A-1a
234	AIWR2	I-90	N of Montrose Ave	Cook	Roadside Control Panel	A-1a
235	AIWR3	I-90	N of Montrose Ave	Cook	Roadside Control Panel	A-1a
236	AOMR1	I-90	N of Grand Ave	Cook	Roadside Control Panel	A-1a
237	AOOR1	I-90/94	E of Milwaukee Ave	Cook	Roadside Control Panel	A-1a
238	AOOR2	I-90/94	E of Milwaukee Ave	Cook	Roadside Control Panel	A-1a

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
239	AOOR3	I-90/94	E of Milwaukee Ave	Cook	Roadside Control Panel	A-1a
240	AOOR4	I-90/94	E of Milwaukee Ave	Cook	Roadside Control Panel	A-1a
241	AOSR1	I-90/94	S of Diversey Ave	Cook	Roadside Control Panel	A-1a
242	AOSR2	I-90/94	S of Diversey Ave	Cook	Roadside Control Panel	A-1a
1	ARACSC1	IL 38	E of I-88 Tollway	DuPage	Chevron Sign	A-1b
2	ARACSC2	IL 38	E of I-88 Tollway	DuPage	Chevron Sign	A-1b
3	ARACSC3	IL 38	E of I-88 Tollway	DuPage	Chevron Sign	A-1b
4	ARACSC4	IL 38	E of I-88 Tollway	DuPage	Chevron Sign	A-1b
5	ARACSC5	IL 38	E of I-88 Tollway	DuPage	Chevron Sign	A-1b
6	ARACSC6	IL 38	E of I-88 Tollway	DuPage	Chevron Sign	A-1b
7	ARACSAS1	IL 38	W of I-88 Tollway	DuPage	Aux Sign AS1	A-1b
8	ARACSAS2	IL 38	W of I-88 Tollway	DuPage	Aux Sign AS2	A-1b
9	ARACSR1	IL 38	W of York Rd	DuPage	Dynamic Message Sign	A-1b
10	ARACSR3	IL 38	W of I-88 Tollway	DuPage	Dynamic Message Sign	A-1b
11	ARACSR4	IL 38	E of I-88 Tollway	DuPage	Dynamic Message Sign	A-1b
12	ARACSG1	IL 38	E of I-88 Tollway	DuPage	Swing Gate 1	A-1b
13	ARACSG2	IL 38	E of I-88 Tollway	DuPage	Swing Gate 2	A-1b
14	ARACSG3	IL 38	E of I-88 Tollway	DuPage	Swing Gate 3	A-1b
15	ARACSG4	IL 38	E of I-88 Tollway	DuPage	Swing Gate 4	A-1b
16	ARACSG5	IL 38	E of I-88 Tollway	DuPage	Swing Gate 5	A-1b
17	ARACSG6	IL 38	E of I-88 Tollway	DuPage	Swing Gate 6	A-1b
18	ARACSG7	IL 38	E of I-88 Tollway	DuPage	Swing Gate 7	A-1b
19	ARACSG8	IL 38	E of I-88 Tollway	DuPage	Swing Gate 8	A-1b
20	ARACSG9	IL 38	E of I-88 Tollway	DuPage	Swing Gate 9	A-1b
21	ARACSG10	IL 38	E of I-88 Tollway	DuPage	Swing Gate 10	A-1b
22	ARACS1	IL 38	W of York Rd	DuPage	OP Camera to Sign EB-R1	A-1b
23	ARACS2	IL 38	E of York Rd	DuPage	OP Camera to Aux Sign AS-1	A-1b
24	ARACS3	IL 38	E of York Rd	DuPage	OP Camera to Aux Sign AS-2	A-1b
25	ARACS4	IL 38	E of I-88 Tollway	DuPage	OP Camera to G1,G2,G3	A-1b
26	ARACS5	IL 38	E of I-88 Tollway	DuPage	OP Camera to G4, G5, G6, G7	A-1b
27	ARACS6	IL 38	E of I-88 Tollway	DuPage	OP Camera to G8, G9, G10	A-1b
28	ARACS7	IL 38 Ramp	S of I-294 Tollway	DuPage	OP Camera for Ramp to I-290	A-1b
1	AIKIBAS	I-290	Ashland Ave IB	Cook	25' Ramp Gate	A-1c
2	AIKIBCA	I-290	California Ave IB	Cook	25' Ramp Gate	A-1c
3	AIKIBCE	I-290	Central Ave IB	Cook	30' Ramp Gate	A-1c
4	AIKIBDA	I-290	Damen Ave IB	Cook	23' Ramp Gate	A-1c
5	AIKIBHO	I-290	Homan Ave IB	Cook	23' Ramp Gate	A-1c
6	AIKIBIN	I-290	Independence Ave IB	Cook	23' Ramp Gate	A-1c
7	AIKIBKO	I-290	Kostner Ave IB	Cook	27.5' Ramp Gate	A-1c
8	AIKIBLA	I-290	Laramie Ave IB	Cook	23' Ramp Gate	A-1c
9	AIKIBOA	I-290	Oakley Ave IB	Cook	25' Ramp Gate	A-1c
10	AKEBAR	I-90/94	Armitage Ave IB	Cook	25' Ramp Gate	A-1c
11	AKEIBAU	I-90/94	Augusta Blvd IB	Cook	25' Ramp Gate	A-1c

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
12	AKEIBCE	I-90	Central Ave IB	Cook	25' Ramp Gate	A-1c
13	AKEIBCN	I-90	Canfield Ave IB	Cook	23' Ramp Gate	A-1c
14	AKEIBCU	I-90	Cumberland Ave IB	Cook	27.5' Ramp Gate	A-1c
15	AKEIBDI	I-90/94	Division St IB	Cook	30' Ramp Gate	A-1c
16	AKEIBDV	I-90/94	Diversey Ave IB	Cook	30' Ramp Gate	A-1c
17	AKEIBFO	I-90	Foster Ave IB	Cook	30' Ramp Gate	A-1c
18	AKEIBFU	I-90/94	Fullerton Ave IB	Cook	30' Ramp Gate	A-1c
19	AKEIBIR	I-90/94	Irving Park Rd IB	Cook	30' Ramp Gate	A-1c
20	AKEIBKE	I-90/94	Kedzie Ave IB	Cook	23' Ramp Gate	A-1c
21	AKEIBKI	I-90/94	Kimball Ave B	Cook	30' Ramp Gate	A-1c
22	AKEIBMO	I-90/94	Montrose Ave IB	Cook	30' Ramp Gate	A-1c
23	AKEIBNA	I-90	Nagle Ave IB	Cook	23' Ramp Gate	A-1c
24	AKEIBNO	I-90/94	North Ave IB	Cook	25' Ramp Gate	A-1c
25	AKEIBPU	I-90/94	Pulaski Rd IB	Cook	27.5' Ramp Gate	A-1c
26	AKEIBSA	I-90	Sayre Ave IB	Cook	23' Ramp Gate	A-1c
27	AKEIBWE	I-90/94	Webster Ave IB	Cook	27.5' Ramp Gate	A-1c
28	AKEOBAD	I-90/94	Addison St OB	Cook	27.5' Ramp Gate	A-1c
29	AKEOBAR	I-90/94	Armitage Ave OB	Cook	25' Ramp Gate	A-1c
30	AKEOBKA	I-90/94	California Ave OB	Cook	30' Ramp Gate	A-1c
31	AKEOBKU	I-90	Cumberland Ave OB	Cook	30' Ramp Gate	A-1c
32	AKEOBKI	I-90/94	Division St OB	Cook	30' Ramp Gate	A-1c
33	AKEOBFO	I-90	Foster Ave OB	Cook	23' Ramp Gate	A-1c
34	AKEOBFU	I-90/94	Fullerton Ave OB	Cook	30' Ramp Gate	A-1c
35	AKEOBHA	I-90	Harlem Ave OB	Cook	23' Ramp Gate	A-1c
36	AKEOBKI	I-90/94	Kimball Ave OB	Cook	30' Ramp Gate	A-1c
37	AKEOBNA	I-90	Nagle Ave OB	Cook	23' Ramp Gate	A-1c
38	AKEOBNO	I-90/94	North Ave OB	Cook	27.5' Ramp Gate	A-1c
39	AKEOBOG	I-90/94	Ogden Ave OB	Cook	30' Ramp Gate	A-1c
40	AKEIBHAN	I-90	Harlem Ave OB	Cook	23' Ramp Gate	A-1c
41	AKEIBHAS	I-90	Harlem Ave OB	Cook	23' Ramp Gate	A-1c

1	ADR0	I-90/94	I-290 Junction	Cook	TM Camera	A-2
2	ADR0A	I-90/94	Polk St	Cook	TM Camera	A-2
3	ADR1	I-90/94	Archer Ave	Cook	TM Camera	A-2
4	ADR1A	I-90/94	Archer Ave	Cook	TM Camera	A-2
5	ADR2	I-90/94	I-55	Cook	TM Camera	A-2
6	ADR2C	I-90/94	24 th Place	Cook	TM Camera 1	A-2
7	ADR2D	I-90/94	24 th Place	Cook	TM Camera 2	A-2
8	ADRY1	I-90/94	Dan Ryan Maint. Yard	Cook	TM Camera	A-2
9	AED0	I-94 Building E Tower	I-90/94	Cook	TM Camera on Monopole	A-2
10	AED1	I-94	Foster Ave	Cook	Tower TM Camera	A-2
11	AEO8	Elgin O'Hare	Rodenburg Maint. Yard	Cook	Tower TM Camera	A-2
12	AEO8A	Elgin O'Hare	Rodenburg Maint. Yard	Cook	Tower TM Camera	A-2
13	AEO8B	Elgin O'Hare	Rodenburg Maint. Yard	Cook	Tower TM Camera	A-2
14	AFS0	I-57	S of Wentworth Ave	Cook	TM Camera	A-2
15	AFS0B	I-57	N of Parnell Ave	Cook	TM Camera	A-2
16	AFS0C	I-57	S of Parnell Ave	Cook	TM Camera	A-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
17	AFS1	I-57	S of Halsted St	Cook	TM Camera	A-2
18	AFS1A	I-57	S of Genoa Ave	Cook	TM Camera	A-2
19	AFS2	I-57	S of 103 rd St	Cook	TM Camera	A-2
20	AFS2A	I-57	107th St & Throop St	Cook	TM Camera	A-2
21	AFS3	I-57	N of 111 th St	Cook	TM Camera	A-2
22	AFS3A	I-57	S of 112 th St	Cook	TM Camera	A-2
23	AFS3B	I-57	S of 115th St	Cook	TM Camera	A-2
24	AFS4	I-57	119 th St	Cook	TM Camera	A-2
25	AFS5	I-57	S of 125 th St	Cook	TM Camera	A-2
26	AFS5A	I-57	S of 127 th St	Cook	TM Camera	A-2
27	AFS5B	I-57	S of Cal Sag Channel	Cook	TM Camera	A-2
28	AFS6	I-57	S of Roll Ave	Cook	TM Camera	A-2
29	AFS7	I-57	S of Thornton Rd	Cook	TM Camera	A-2
30	AFS7A	I-57	N of Leavitt Ave	Cook	TM Camera	A-2
31	AFS7B	I-57	N of Dixie Highway	Cook	TM Camera	A-2
32	AFS8	I-57	Sibley Blvd NB Entrance	Cook	TM Camera	A-2
33	AFS8A	I-57	Sibley Blvd SB Exit ramp	Cook	TM Camera	A-2
34	AFS8B	I-57	S of 149 th St	Cook	TM Camera	A-2
35	AFS9	I-57	N of Kedzie Ave	Cook	TM Camera	A-2
36	AFS9A	I-57	N of 155 th St	Cook	TM Camera	A-2
37	AFS10	I-57	N of 159 th St	Cook	TM Camera	A-2
38	AFS10A	I-57	S of 159th St	Cook	TM Camera	A-2
39	AFS11	I-57	N of 163 rd St	Cook	TM Camera	A-2
40	AFS11A	I-57	N of 167th St	Cook	TM Camera	A-2
41	AFS12	I-57	S of 167th St	Cook	TM Camera	A-2
42	AFS12A	I-57	S of Cicero Ave	Cook	TM Camera	A-2
43	AFS12B	I-57	N of 175 th St	Cook	TM Camera	A-2
44	AFS13	I-57	S of 175th St	Cook	TM Camera	A-2
45	AFS13A	I-57	N of I-80	Cook	TM Camera	A-2
46	AFS13B	I-57	S of I-80	Cook	TM Camera	A-2
47	AFS14	I-57	S of 186th St	Cook	TM Camera	A-2
48	AIK0	I-290	UIC Roof # 1	Cook	TM Camera	A-2
49	AIK0A	I-290	UIC Roof # 2	Cook	TM Camera	A-2
50	AIK0B	I-290	UIC Roof # 3	Cook	TM Camera	A-2
51	AIK12	I-290	US 12/45 (Mannheim Rd)	Cook	TM Camera	A-2
52	AIK13	I-290	W of US 12/45 (Mannheim)	Cook	TM Camera	A-2
53	AIK14	I-290	EB I-88 Tollway Merge	Cook	TM Camera	A-2
54	AIK14A	I-290	Hillside Tower – E Leg	Cook	Tower TM Camera	A-2
55	AIK14B	I-290	Hillside Tower – W Leg	Cook	Tower TM Camera	A-2
56	AIK14C	I-290	Hillside Tower – S Leg	Cook	Tower TM Camera	A-2
57	AIK14D	I-290	Wolf Rd	Cook	TM Camera	A-2
58	AIK14E	I-290	Butterfield Rd	Cook	TM Camera	A-2
59	AIK26	I-290	N of Devon Ave	Cook	TM Camera	A-2
60	AIK26A	I-290	S of Biesterfield Rd	Cook	TM Camera	A-2
61	AIK27	I-290	N of Biesterfield Rd	Cook	TM Camera	A-2
62	AIK27A	I-290	N of Biesterfield Rd	Cook	TM Camera	A-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
63	AIK28	I-290	S of Schaumburg Rd	Cook	TM Camera	A-2
64	AIK28A	I-290	Schaumburg Rd, Tower MAB1	Cook	TM Camera	A-2
65	AIK28B	I-290	IL 72 Higgins Rd Ent	Cook	TM Camera	A-2
66	AIK29	I-290	IL 72 Higgins Rd, Tower OAB2	Cook	TM Camera	A-2
67	AIK29A	I-290	IL 72 Higgins Rd NB Ent	Cook	TM Camera	A-2
68	AIK29B	I-290	Woodfield Dr., Tower OCD3	Cook	TM Camera	A-2
69	AIK29C	I-290	Woodfield Dr Ent	Cook	TM Camera	A-2
70	AIK29D	I-290	Golf Rd, Tower PMN1	Cook	TM Camera	A-2
71	AIK30	I-290	I-90 SW Quad, Tower PUV2	Cook	TM Camera	A-2
72	AIK30A	I-290	I-90 NW Quad, Tower RAB4	Cook	TM Camera	A-2
73	AIK30B	I-290	IL 62 Algonquin Rd, Tower RAB1	Cook	TM Camera	A-2
74	ABOY1	Biesterfield Bridge Yard	South Storage Yard	Cook	TM Camera	A-2
75	AKE0	I-90/94	I-290 NE Quad	Cook	TM Camera	A-2
76	AKE0A	I-90/94	S of Jackson Blvd	Cook	TM Camera	A-2
77	AKE0B	I-90/94	Hubbard St Cave	Cook	TM Camera	A-2
78	AKE0C	I-90/94	Hubbard St Cave Underpass	Cook	TM Camera	A-2
79	AKE0D	I-90/94	Hubbard St Cave Underpass	Cook	TM Camera	A-2
80	AKE0E	I-90/94	Hubbard St Cave	Cook	TM Camera	A-2
81	AKE0F	I-90/94	Hubbard St Cave	Cook	TM Camera	A-2
82	AKE1	I-90/94	Grand Ave	Cook	TM Camera	A-2
83	AKE1A	I-90/94 Building A	OntarioSt / Ohio St	Cook	TM Camera on Monopole	A-2
84	AKE3	I-90/94	Webster Ave	Cook	TM Camera	A-2
85	AKE3A	I-90/94	Webster Ave / Damon Ave	Cook	TM Camera	A-2
86	AKE3B	I-90/94	Damon Ave	Cook	TM Camera	A-2
87	AKE4	I-90/94	Fullerton Ave N AIS	Cook	TM Camera	A-2
88	AKE4A	I-90/94	Fullerton Ave	Cook	TM Camera	A-2
89	AKE4B	I-90/94	Fullerton Ave S AIS	Cook	TM Camera	A-2
90	AKE4C	I-90/94	Western Ave	Cook	TM Camera	A-2
91	AKE4D	I-90/94	Logan Blvd / Webster Ave	Cook	TM Camera	A-2
92	AKE4E	I-90/94	Logan Blvd	Cook	TM Camera	A-2
93	AKE5	I-90/94	Diversey Ave	Cook	TM Camera	A-2
94	AKE5A	I-90/94	California / Diversey Ave	Cook	TM Camera	A-2
95	AKE5B	I-90/94	California Ave	Cook	TM Camera	A-2
96	AKE5C	I-90/94	SE of Sacramento Ave	Cook	TM Camera	A-2
97	AKE5D	I-90/94	Sacramento Ave	Cook	TM Camera	A-2
98	AKE6	I-90/94	Kimball Ave	Cook	TM Camera	A-2
99	AKE6A	I-90/94	NW of Kimball Ave	Cook	TM Camera	A-2
100	AKE7	I-90/94	Irving Park Rd	Cook	TM Camera	A-2
101	AKE7A	I-90/94	Keeler Ave / Irving Park Rd	Cook	TM Camera	A-2
102	AKE7B	I-90/94	Keeler Ave	Cook	TM Camera	A-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
103	AKE7C	I-90/94	Kostner Ave	Cook	TM Camera	A-2
104	AKE7D	I-90/94	NW of Kostner Ave	Cook	TM Camera	A-2
105	AKE13	I-90/94	W of Cumberland Ave, Tower D1AB5	Cook	TM Camera	A-2
106	AKE13A	I-90/94	East River Rd, Tower D1AB1	Cook	TM Camera	A-2
107	AKE14	I-90/94	W of East River Rd, Tower D1GH3	Cook	TM Camera	A-2
108	AKE15	I-90/94	E of Mannheim Rd	Cook	TM Camera	A-2
109	AKE15A	I-90/94	E of Mannheim Rd	Cook	TM Camera	A-2
110	ASCH1	Roselle Rd/Central Rd	101 E. Center Rd/Schaum.	Cook	Tower TM Camera	A-2
111	ASCH2	Roselle Rd/Central Rd	101 E. Center Rd/Schaum.	Cook	Tower TM Camera	A-2
112	ASCH3	Roselle Rd/Central Rd	101 E. Center Rd/Schaum.	Cook	Tower TM Camera	A-2
113	AST0	I-55	Near Microwave Hut	Cook	TM Camera on Monopole	A-2
114	AST1	I-55	West of Canal St	Cook	TM Camera	A-2
115	AST1A	I-55	I-90/94 Kennedy	Cook	TM Camera	A-2
116	AST1B	I-55	I-90/94 Dan Ryan	Cook	TM Camera	A-2
117	AST1C	I-55	East of Halsted St	Cook	TM Camera	A-2
118	AST5	I-55	West of California Ave	Cook	TM Camera	A-2
119	AST6	I-55	East of Cicero Ave	Cook	TM Camera	A-2
120	AST6A	I-55	Cicero Ave Exit Ramp	Cook	TM Camera	A-2
121	AST7	I-55	East of Central Ave	Cook	TM Camera	A-2
122	AST8	I-55	West of Central Ave	Cook	TM Camera	A-2
123	AST9	I-55	East of Harlem Ave	Cook	TM Camera	A-2
124	AST10	I-55	Harlem Ave	Cook	TM Camera	A-2
125	AST10A	I-55	.5 Mi East of 1 st Ave	Cook	TM Camera	A-2
126	AST11	I-55	East of 1 st Ave	Cook	TM Camera	A-2
127	AST11A	I-55	West of 1 st Ave	Cook	TM Camera	A-2
128	AST12	I-55	.75 Mi West of 1 st Ave	Cook	TM Camera	A-2
129	AST12A	I-55	1.25 Mi West of 1 st Ave	Cook	TM Camera	A-2
130	AST13	I-55	.5 Mi East of East Ave	Cook	TM Camera	A-2
131	AST14	I-55	LaGrange Rd East Side	Cook	TM Camera	A-2
132	AST14A	I-55	LaGrange Rd West Side	Cook	TM Camera	A-2
133	AST14B	I-55	LaGrange Rd	Cook	TM Camera	A-2
134	AST15	I-55	East of Willow Springs Rd	Cook	TM Camera	A-2
135	AST15A	I-55	LaGrange Rd	Cook	TM Camera	A-2
136	APS23	I-90/94	PS 23-Roscoe/ Addison	Cook	TM Camera on Wood Pole	A-2
137	ATSC	Traffic Systems Center	445 Harrison St. Oak Park	Cook	TM Camera on Monopole	A-2
138	AIK15	I-290	St. Charles Rd	DuPage	TM Camera	A-2
139	AIK16	I-290	North Ave	DuPage	TM Camera	A-2
140	AIK18	I-290	York Rd	DuPage	TM Camera	A-2
141	AIK19	I-290	Grand Ave	DuPage	TM Camera	A-2
142	AIK23	I-290	Nordic Rd Tower	DuPage	Tower TM Camera	A-2
143	AIK23A	I-290	Nordic Rd Tower	DuPage	Tower TM Camera	A-2
144	AIK23B	I-290	Nordic Rd Tower	DuPage	Tower TM Camera	A-2
145	AIK25	I-290	I-290 SB Ent Thorndale	DuPage	TM Camera	A-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross St	Co.	Type of Equipment	Pay Item
			Rd			
146	AIK25A	I-290	I-290 SB Exit Thorndale Rd	DuPage	TM Camera	A-2
147	AIK25B	I-290	S of Devon Ave	DuPage	TM Camera	A-2
148	ALP1	US 41	West Park Ave	Lake	TM Camera	A-2

1	AA	I-90/94	950 W Ontario OM	Cook	REVLAC Building/Monopole	A-3a
2	AB	I-90/94	1035 W Grand Ave	Cook	REVLAC Building	A-3a
3	AC	I-90/94	2735 George St OS	Cook	REVLAC Building	A-3a
4	AD	I-90/94	3002 N Fransisco IS	Cook	REVLAC Building	A-3a
5	AE	I-90/94	4755 Wilson Ave OE	Cook	REVLAC Building/Monopole	A-3a
6	AH55A	I-55	26 th St & Wallace St	Cook	Hut	A-3a
7	AH57A	I-57	Parnell Ave	Cook	Hut	A-3a
8	AH57B	I-57	I-80	Cook	Hut	A-3a
9	AHRB	IL 38 RACS Ramp	12100 W. Roosevelt Rd	Cook	Hut	A-3a
10	ATFOS	I-94	Foster Ave	Cook	Tower / Base Station	A-3a
11	ATHIL	I-294 / 1-88	5250 W Harrison	Cook	Tower / Hut / Media Hut	A-3a
12	ATNOR	I-290	I-355, Nordic	DuPage	Tower / Hut	A-3a
13	ATSCH	I-90	101 W. Center Ct., Schaumburg	Cook	Tower / Hut	A-3a

1	AEFO	IDOT EMC/ Material Lab	101 W. Center Ct., Schaumburg	Cook	Building	A-3b
2	AEMC	EMC Contractor	To Be Determined	Various	Dispatch	A-3b
3	AETP	I-90/94	3501 Harrison St, Chicago	Cook	Lighting, AVL, Video, Cattron	A-3b
4	AH290A	I-290	I-90/94 @ Halsted St	Cook	Hut	A-3b
5	AHQ1	IDOT D1 HQ	201 W Center Ct. , Schaumburg	Cook	Building / Monopole	A-3b
6	ATPLA	IL 47	McDonald Rd, Plato	Kane	Tower / Base Station	A-3b
7	ATTSC	Traffic Systems Center	445 Harrison St, Oak Park	Cook	Building / Monopole	A-3b

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
1	L0103	I-55	Martin Luther King Dr	Cook	A	L-1
2	L0105	I-55	Michigan Ave	Cook	B	L-1
3	L0110	I-55	Wentworth Ave	Cook	C	L-1
4	L0115	I-55	Stewart Ave	Cook	D	L-1
5	L0120	I-55	Loomis St [Incl Nav]	Cook	E	L-1
6	L0123	I-55	Ashland Ave	Cook	E1	L-1
7	L0125	I-55	Damen Ave	Cook	F	L-1
8	L0130	I-55	California Ave	Cook	G	L-1
9	L0133	I-55	Kedzie Ave	Cook	G1	L-1
10	L0135	I-55	Pulaski Rd	Cook	H	L-1
11	L0137	I-55	Pulaski Rd Tunnel	Cook	H1	L-1
12	L0140	I-55	IL 50 (Cicero Ave)	Cook	I	L-1
13	L0145	I-55	S Central Ave	Cook	W	L-1
14	L0150	I-55	N Central Ave	Cook	X	L-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
15	L0155	I-55	Central Ave	Cook	J	L-1
16	L0160	I-55	64th St (6400 W)	Cook	K	L-1
17	L0165	I-55	IL 43 (Harlem Ave)	Cook	L	L-1
18	L0170	I-55	IL 43 (Harlem Ave)	Cook	Y	L-1
19	L0171	I-55	IL171 & 55th St	Cook	V	L-1
20	L0173	I-55	IL 171 (1st Ave) [Incl Nav]	Cook	M	L-1
21	L0175	I-55	IL 171 (1st Ave) [Incl Nav]	Cook	N	L-1
22	L0177	I-55	IL 171 & 47th St	Cook	Z	L-1
23	L0180	I-55	85th Ave (8500W)	Cook	O	L-1
24	L0184	I-55	91st Ave (9100W)	Cook	P	L-1
25	L0187	I-55	US 12/20/45 (LaGrange Rd)	Cook	R	L-1
26	L0188	I-55	US12/20/45 SB Ramp	Cook	R1	L-1
27	L0190	I-55	Wolf Rd	Cook	S	L-1
28	L0193	I-55	W of I-294 Tollway	Cook	S1	L-1
29	L0195	I-55	County Line Rd	Cook	T	L-1
30	L0403	I-57	99th St	Cook	A	L-1
31	L0405	I-57	Racine Ave	Cook	B	L-1
32	L0410	I-57	107th Pl	Cook	C	L-1
33	L0415	I-57	112th St	Cook	D	L-1
34	L0420	I-57	120th St	Cook	E	L-1
35	L0425	I-57	127th St	Cook	F	L-1
36	L0430	I-57	Vermont St	Cook	G	L-1
37	L0435	I-57	IHB RR	Cook	H	L-1
38	L0440	I-57	Spaulding Ave	Cook	I	L-1
39	L0445	I-57	147th St	Cook	J	L-1
40	L0450	I-57	Kedzie Ave	Cook	K	L-1
41	L0455	I-57	US 6 (159th St)	Cook	L	L-1
42	L0460	I-57	159th St & Crawford Ave	Cook	P	L-1
43	L0465	I-57	163rd St (Barry Ln)	Cook	M	L-1
44	L0470	I-57	W 167th St	Cook	N	L-1
45	L0475	I-57	E 167th St	Cook	O	L-1
46	L0480	I-57	175th St	Cook	T	L-1
47	L0485	I-57	I-80	Cook	U	L-1
48	L0489	I-57	Flossmoor Rd	Cook	V	L-1
49	L0492	I-57	Vollmer Rd	Cook	W	L-1
50	L0495	I-57	US 30 (Lincoln Highway)	Cook	X	L-1
51	L0497	I-57	Sauk Trail Rd	Cook	Y	L-1
52	L0603	I-80/94	Burnham Ave	Cook	A	L-1
53	L0605	I-80/94	Torrence Ave	Cook	B	L-1
54	L0610	I-80	169th St	Cook	E	L-1
55	L0615	I-80	Crawford Ave	Cook	F	L-1
56	L0618	I-80	175th St	Cook	F1	L-1
57	L0620	I-80	Central Ave	Cook	G	L-1
58	L0625	I-80	Ridgeland Ave	Cook	H	L-1
59	L0803	US 12/45	Devon Ave	Cook	A	L-1
60	L0805	US 12/45	Lawrence Ave	Cook	B	L-1
61	L0810	I-190	CN RR / Soo RR	Cook	C	L-1
62	L0815	I-190	Des Plaines River Rd	Cook	D	L-1
63	L0820	I-90	East River Rd	Cook	D1	L-1
64	L0825	I-90	Cumberland Ave	Cook	E	L-1
65	L0830	I-90	Oriole Ave	Cook	F	L-1
66	L0835	I-90	Sayer Ave	Cook	G	L-1
67	L0840	I-90	Moody Ave	Cook	H	L-1
68	L0845	I-90	Edmunds St	Cook	I	L-1
69	L0847	I-90	Lawrence Ave	Cook	J	L-1
70	L0850	I-90/94	Kedvale Ave	Cook	K	L-1
71	L0853	I-90/94	Kimball Ave	Cook	L	L-1
72	L0855	I-90/94	California Ave	Cook	M	L-1
73	L0857	I-90/94	Leavitt St	Cook	N	L-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
74	L0860	I-90/94	Cortland St	Cook	O	L-1
75	L0863	I-90/94	Blackhawk St	Cook	P	L-1
76	L0865	I-90/94	Augusta Blvd	Cook	R	L-1
77	L0867	I-90/94	Grand Ave	Cook	S	L-1
78	L0870	I-90/94	Ontario St / Ohio St	Cook	S1	L-1
79	L0873	I-90/94	Erie St	Cook	S2	L-1
80	L0875	I-90/94	Hubbard St	Cook	W	L-1
81	L0883	I-90/94	Hubbard St Cave	Cook	T	L-1
82	L0886	I-90/94	W Washington Blvd	Cook	U	L-1
83	L0888	I-90/94	E Washington Blvd	Cook	V	L-1
84	L0890	I-90/94	Van Buren St	Cook	Z	L-1
85	L0903	I-94	99th St	Cook	N	L-1
86	L0905	I-94	91st St	Cook	O	L-1
87	L0910	I-94	81st St	Cook	P	L-1
88	L0915	I-94	73rd St	Cook	R	L-1
89	L0917	I-90/94	67th St	Cook	R1	L-1
90	L0920	I-90/94	63rd St	Cook	S	L-1
91	L0925	I-90/94	57th St	Cook	T	L-1
92	L0927	I-90/94	55th St	Cook	T1	L-1
93	L0930	I-90/94	48th St	Cook	U	L-1
94	L0935	I-90/94	Root St	Cook	V	L-1
95	L0940	I-90/94	35th St	Cook	W	L-1
96	L0945	I-90/94	27th St	Cook	X	L-1
97	L0950	I-90/94	Normal Ave	Cook	Y	L-1
98	L0955	I-90/94	Wallace St	Cook	Z	L-1
99	L0960	I-90/94	21st Pl [Incl Nav]	Cook	A	L-1
100	L0965	I-90/94	17th St	Cook	B	L-1
101	L0970	I-90/94	Maxwell St	Cook	C	L-1
102	L0975	I-90/94	Polk St	Cook	D	L-1
103	L1003	IL 394	Sauk Trail Rd	Cook	A	L-1
104	L1004	IL 394	US 30 (Lincoln Highway)	Cook	N	L-1
105	L1005	IL 394	Glenwood Dyer Rd	Cook	B	L-1
106	L1008	IL 394	Thornton-Lansing Rd	Cook	D1	L-1
107	L1010	I-94	N of I-80	Cook	C	L-1
108	L1015	I-94	S of I-80	Cook	D	L-1
109	L1017	I-94	170th St	Cook	E1	L-1
110	L1020	I-94	165th St	Cook	E	L-1
111	L1025	I-94	159th St	Cook	F	L-1
112	L1030	I-94	Michigan City Rd	Cook	G	L-1
113	L1032	I-94	147th St	Cook	G1	L-1
114	L1035	I-94	Dolton Ave	Cook	H	L-1
115	L1040	I-94	137th St	Cook	X	L-1
116	L1046	I-94	E 130th St	Cook	V	L-1
117	L1047	I-94	W 130th St	Cook	W	L-1
118	L1050	I-94	119th St	Cook	J	L-1
119	L1055	I-94	111th St	Cook	K	L-1
120	L1060	I-94	115th St	Cook	Y	L-1
121	L1065	I-94	103rd St	Cook	L	L-1
122	L1070	I-94	100th St	Cook	M	L-1
123	L1075	I-94	Stoney Island Feeder/105th	Cook	P	L-1
124	L1080	I-94	Stoney Island Feeder /103rd	Cook	R	L-1
125	L1085	I-94	Stoney Island Feeder & 98th	Cook	S	L-1
126	L1090	I-94	Stoney Island Feeder & 99th	Cook	T	L-1
127	L1203	I-94	Knox Ave	Cook	A	L-1
128	L1205	I-94	Foster Ave	Cook	B	L-1
129	L1210	I-94	US 14 (Caldwell/Peterson)	Cook	C	L-1
130	L1215	I-94	Pratt Ave	Cook	D	L-1
131	L1220	I-94	Touhy Ave	Cook	E	L-1
132	L1225	I-94	Niles Center Rd	Cook	F	L-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
133	L1230	I-94	Oakton Rd	Cook	G	L-1
134	L1235	I-94	IL 58 (Dempster St)	Cook	H	L-1
135	L1240	I-94	Golf Rd	Cook	J	L-1
136	L1245	I-94	Glenview Rd	Cook	K	L-1
137	L1250	I-94	Lake Ave	Cook	L	L-1
138	L1255	I-94	Winnetka Rd	Cook	M	L-1
139	L1260	I-94	Willow Rd	Cook	N	L-1
140	L1265	I-94	Tower Rd	Cook	O	L-1
141	L1270	I-94	S of IL 68 (Dundee Rd)	Cook	P	L-1
142	L1275	I-94	IL 68 (Dundee Rd)	Cook	R	L-1
143	L1280	I-94	Lake Cook Rd	Cook	S	L-1
144	L1303	I-290	N Wells St	Cook	A	L-1
145	L1305	I-290	S Wells St	Cook	B	L-1
146	L1310	I-290	Franklin St	Cook	C	L-1
147	L1315	I-290	Wacker Dr	Cook	D	L-1
148	L1325	I-290	Canal St	Cook	F	L-1
149	L1330	I-290	Racine Ave	Cook	G	L-1
150	L1335	I-290	Leavitt St	Cook	H	L-1
151	L1340	I-290	Kedzie Ave	Cook	I	L-1
152	L1345	I-290	Pulaski Ave / Crawford Ave	Cook	J	L-1
153	L1350	I-290	IL 50 (Cicero Ave)	Cook	K	L-1
154	L1355	I-290	Central Ave	Cook	L	L-1
155	L1360	I-290	Oak Park Ave	Cook	M	L-1
156	L1362	I-290	IL 43 (Harlem Ave)	Cook	M1	L-1
157	L1365	I-290	Des Plaines Ave	Cook	N	L-1
158	L1370	I-290	IL 171 (1st Ave)	Cook	O	L-1
159	L1375	I-290	17th Ave	Cook	P	L-1
160	L1380	I-290	25th Ave	Cook	R	L-1
161	L1385	I-290	Westchester Blvd	Cook	S	L-1
162	L1386	I-290	US 12/20/45 (Mannheim Rd)	Cook	W	L-1
163	L1387	I-290	Wolf Rd Exit Ramp	Cook	X	L-1
164	L1388	I-290	Orchard Ave	Cook	Y	L-1
165	L1390	I-290	Laverne Ave (Wolf Rd)	Cook	T	L-1
166	L1391	I-290	W of I-88 Split	Cook	Z	L-1
167	L1393	I-290	Roosevelt Rd Exit Ramp	Cook	U	L-1
168	L1397	I-290	Arthur Ave	Cook	V	L-1
169	L1504	I-290 / IL 53	Bieberfield Rd	Cook	S	L-1
170	L1505	I-290 / IL 53	Schaumburg Rd	Cook	M	L-1
171	L1510	I-290 / IL 53	S of IL 72 (Higgins Rd)	Cook	N	L-1
172	L1515	I-290 / IL 53	IL 72 (Higgins Rd)	Cook	O	L-1
173	L1520	I-290 / IL 53	IL 58 (Golf Rd)	Cook	P	L-1
174	L1525	I-290 / IL 53	IL 62 (Algonquin Rd)	Cook	R	L-1
175	L1535	I-290 / IL 53	Euclid St	Cook	U	L-1
176	L1540	I-290 / IL 53	US 14 (Northwest Highway)	Cook	V	L-1
177	L1545	I-290 / IL 53	Palatine Rd	Cook	W	L-1
178	L1550	I-290 / IL 53	US 12 (Rand Rd)	Cook	X	L-1
179	L1580	I-290 / IL 53	IL 68 (Dundee Rd)	Cook	Y	L-1
180	L1590	I-290 / IL 53	Lake Cook Rd	Cook	Z	L-1
181	L2515	Elgin O'Hare	W of Plum Grove Rd	Cook	J	L-1
182	L2520	Elgin O'Hare	Roselle Rd	Cook	K	L-1
183	L2525	Elgin O'Hare	Mitchell Blvd	Cook	L	L-1
184	L2530	Elgin O'Hare	Rodenburg Rd	Cook	M	L-1
185	L2535	Elgin O'Hare	Springinsguth Rd	Cook	N	L-1
186	L0203	I-55	Madison St	DuPage	A	L-1
187	L0205	I-55	S IL 83 (Kingery Highway)	DuPage	B	L-1
188	L0210	I-55	N IL 83 (Kingery Highway)	DuPage	C	L-1
189	L0215	I-55	Cass Ave	DuPage	D	L-1
190	L0220	I-55	Kearney Rd	DuPage	E	L-1
191	L0225	I-55	Lemont Rd	DuPage	F	L-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
192	L0230	I-55	Woodward Ave	DuPage	G	L-1
193	L1405	I-290	St Charles Rd	DuPage	W	L-1
194	L1410	I-290	IL 64 (North Ave)	DuPage	X	L-1
195	L1415	I-290	York Rd	DuPage	Y	L-1
196	L1420	I-290	Grand Ave	DuPage	A	L-1
197	L1425	I-290	Villa Ave	DuPage	B	L-1
198	L1430	I-290	N IL 83 (Elmhurst Rd)	DuPage	C	L-1
199	L1435	I-290	S IL 83 (Elmhurst Rd)	DuPage	D	L-1
200	L1440	I-290	Addison Rd	DuPage	E	L-1
201	L1445	I-290	Mill Rd	DuPage	F	L-1
202	L1450	I-290	Itasca Rd	DuPage	G	L-1
203	L1455	I-290	I-290 / I-355 & Central Ave	DuPage	H	L-1
204	L1458	I-290 / I-355	US 20 (Lake St)	DuPage	I	L-1
205	L1460	I-290	IL19 (Irving Park Rd)	DuPage	J	L-1
206	L1465	I-290	Thorndale Ave	DuPage	K	L-1
207	L1468	I-290	Devon Ave	DuPage	L	L-1
208	L1470	I-290 / I-355	Army Trail Rd	DuPage	T	L-1
209	L2605	Elgin O'Hare	IL 53 (Rohlwing Rd)	DuPage	H	L-1
210	L2610	Elgin O'Hare	Meacham Rd / Medinah Rd	DuPage	I	L-1
211	L2615	Elgin O'Hare	Wetland's (Metra RR Bridge)	DuPage	O	L-1
212	L2620	Elgin O'Hare	US 20 (Lake St)	DuPage	P	L-1
213	L1103	I - 94 (US 41)	Clavey Rd	Lake	T	L-1
214	L0305	I-55	Joliet Rd	Will	H	L-1
215	L0307	I-55	International Drive	Will	H1	L-1
216	L0310	I-55	IL 53	Will	I	L-1
217	L0313	I-55	W of IL 53	Will	I1	L-1
218	L0321	I-55	E of Naperville Rd	Will	K2	L-1
219	L0322	I-55	E of Weber Rd	Will	K1	L-1
220	L0323	I-55	Weber Rd	Will	K	L-1
221	L0325	I-55	IL 126	Will	L	L-1
222	L0330	I-55	US 30 (Lincoln Highway)	Will	M	L-1
223	L0335	I-55	US 52 (Jefferson St)	Will	N	L-1
224	L0340	I-55	IL 59 (Brookforest Ave)	Will	O	L-1
225	L0345	I-55	I-80	Will	P	L-1
226	L0350	I-55	US 6	Will	R	L-1
227	L0355	I-55	Bluff Rd	Will	S	L-1
228	L0360	I-55	Arsenal Rd	Will	T	L-1
229	L0365	I-55	Wilmington Rd	Will	U	L-1
230	L0370	I-55	Lorenzo Rd	Will	V	L-1
231	L0375	I-55	IL 129	Will	X	L-1
232	L0380	I-55	IL 113	Will	Y	L-1
233	L0385	I-55	Reed Rd	Will	Z	L-1
234	L0525	I-57	Manhattan Rd / Monee Rd	Will	M	L-1
235	L0560	I-57	Wilmington Rd / Peotone Rd	Will	Y	L-1
236	L0703	I-80	IL 43 (Harlem Ave)	Will	I	L-1
237	L0707	I-80	W of 80th Ave	Will	B	L-1
238	L0713	I-80	W of 88th Ave	Will	D	L-1
239	L0715	I-80	US 45 (96th Ave)	Will	F	L-1
240	L0717	I-80	E of 104th Ave	Will	G	L-1
241	L0724	I-80	I-355	Will	K	L-1
242	L0728	I-80	US 30 (Lincoln Highway)	Will	N	L-1
243	L0730	I-80	Briggs St	Will	P	L-1
244	L0735	I-80	N Richard St	Will	R	L-1
245	L0740	I-80	S Richard St	Will	S	L-1
246	L0750	I-80	IL 53 (Chicago St)	Will	U	L-1
247	L0755	I-80	Water St	Will	V	L-1
248	L0760	I-80	E Center St	Will	W	L-1
249	L0765	I-80	W Center St	Will	X	L-1
250	L0770	I-80	Larkin Ave	Will	Y	L-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
251	L0775	I-80	Houbolt Rd	Will	Z	L-1
1	L1603	US 12 (Rand Rd)	US 12/45 (Lee St)	Cook	AD	L-2
2	L1605	US 12 (Rand Rd)	Euclid St	Cook	AR	L-2
3	L1607	US 12 (Rand Rd)	Lake Cook Rd	Cook	XI	L-2
4	L1610	US 14 (NW Hwy)	Baldwin Rd	Cook	AA	L-2
5	L1615	US 14 (Dempster St)	IL 21(Milwaukee Ave)	Cook	AM	L-2
6	L1626	US 14 (Dempster St)	I-294 (Tollway)	Cook	XL	L-2
7	L1627	Busse Hwy	I-294 (Tollway)	Cook	XM	L-2
8	L1628	Oakton St	I-294 (Tollway)	Cook	XN	L-2
9	L1629	Touhy Ave	I-294 (Tollway)	Cook	XR	L-2
10	L1630	US 20 (Lake St)	IL 59 (Sutton Rd)	Cook	AC	L-2
11	L1635	US 20 (Lake St)	Shales Pkwy / Bluff City Rd	Cook	AY	L-2
12	L1637	IL 43 (Waukegan Rd)	I-94 (Tollway)	Cook	RB	L-2
13	L1640	US 45 (DesPlaines Riv)	IL 21 (Milwaukee Ave)	Cook	AX	L-2
14	L1641	US 45 (Des Plaines Riv)	IL 58 (Golf Rd)	Cook	AO	L-2
15	L1645	US 45/IL 21 Milwaukee	Hintz Rd	Cook	AV	L-2
16	L1647	US 45/IL 21Milwaukee	Lake Cook Rd	Cook	AK	L-2
17	L1650	IL 59 (Sutton Rd)	IL 58 (Golf Rd)	Cook	AH	L-2
18	L1653	IL 58 (Golf Rd)	Roselle Rd	Cook	RG	L-2
19	L1656	IL 58 (Golf Rd)	Highland Blvd	Cook	RH	L-2
20	L1657	IL 58 (Golf Rd)	IL 72 (Higgins Rd)	Cook	RE	L-2
21	L1658	IL 58 (Golf Rd)	Gannon Dr	Cook	RI	L-2
22	L1659	IL 58 (Golf Rd)	Southbridge Ln	Cook	RJ	L-2
23	L1660	IL 59 (Sutton Rd)	IL 68 (Dundee Rd)	Cook	AI	L-2
24	L1662	IL 59 (Sutton Rd)	IL 72 (Higgins Rd)	Cook	AW	L-2
25	L1663	IL 59 (Sutton Rd)	Shoe Factory Rd	Cook	AZ	L-2
26	L1664	IL 62 (Algonquin Rd)	Arlington Heights Rd	Cook	AF	L-2
27	L1668	IL 72 (Higgins Rd)	Barrington Rd	Cook	XK	L-2
28	L1673	IL 72 (Higgins Rd)	Spring Mill Dr	Cook	RD	L-2
29	L1674	IL 72 (Higgins Rd)	Churchill Rd	Cook	RF	L-2
30	L1675	US 14 (NW Hwy)	IL 68 (Dundee Rd)	Cook	AG	L-2
31	L1677	IL 72 (Higgins Rd)	Roselle Rd	Cook	RC	L-2
32	L1678	IL 72 (Higgins Rd)	Morningside Dr	Cook	XF	L-2
33	L1680	IL 72 (Higgins Rd)	Touhy Ave	Cook	AL	L-2
34	L1683	IL 83 (Elmhurst Rd)	Palatine Rd	Cook	AS	L-2
35	L1685	Busse Highway	Oakton St	Cook	AB	L-2
36	L1687	Palatine Rd	Wheeling Rd	Cook	AT	L-2
37	L1691	Willow Rd	I-294 (Tollway)	Cook	XD	L-2
38	L1695	IL 72 (Higgins Rd)	I-90 (Tollway)	Cook	AN	L-2
39	L1698	Wolf Rd	I-90 (Tollway)	Cook	AQ	L-2
40	L1703	US12/20/45 (LaGrange)	IL 171 NE Ramp	Cook	BA	L-2
41	L1705	US12/20/45 (LaGrange)	IL 171 SW Ramp	Cook	BL	L-2
42	L1706	US12/20/45 (LaGrange)	Chicago Sanitary & Ship Canal	Cook	BK	L-2
43	L1707	IL 38 (Roosevelt Rd)	Boeger St	Cook	YA	L-2
44	L1708	IL 38 (Roosevelt Rd)	US 12/20/45 (Mannheim Rd)	Cook	YB	L-2
45	L1709	US12/20/45 (Mannheim)	22nd St (Cermak Rd)	Cook	BF	L-2
46	L1710	US12/45 (Mannheim)	IL 19 (Irving Park Rd)	Cook	BD	L-2
47	L1713	US 34 (Ogden Ave)	26th St	Cook	BZ	L-2
48	L1714	US 34 (Ogden Ave)	IL 50 (Cicero Ave)	Cook	BY	L-2
49	L1716	US 34 (Ogden Ave)	Wolf Rd	Cook	BW	L-2
50	L1717	IL 38 (Roosevelt Rd)	I-294 (Tollway)	Cook	BB	L-2
51	L1730	IL 43 (Harlem Ave)	66th St	Cook	BX	L-2
52	L1731	IL 43 (Harlem Ave)	79th St	Cook	BH	L-2
53	L1732	IL 64 (North Ave)	IL 171 (1st Ave)	Cook	BG	L-2
54	L1735	22nd St (Cermak Rd)	IL 171 (1st Ave)	Cook	BC	L-2
55	L1740	Lower Wacker Dr	Randolph St	Cook	BI	L-2
56	L1745	Lower Wacker Dr	Madison St	Cook	BJ	L-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
57	L1753	Lower Wacker Dr	Adams St	Cook	BN	L-2
58	L1755	Lower Wacker Dr	Van Buren St	Cook	BM	L-2
59	L1760	Damen Ave	Webster Ave	Cook	YV	L-2
60	L1762	Western Ave	Logan Blvd	Cook	YX	L-2
61	L1763	Sacramento Ave	Wellington Ave	Cook	YY	L-2
62	L1764	Kostner Ave	Berteau Ave	Cook	YZ	L-2
63	L1794	IL 43 (Harlem Ave)	Lawrence Ave	Cook	YT	L-2
64	L1802	US 12/20/45 (96th Ave)	87th St	Cook	CV	L-2
65	L1803	US 12/20/45 (96th Ave)	US 12/20 (95th St)	Cook	CW	L-2
66	L1804	US 45 (LaGrange Rd)	107th St	Cook	CX	L-2
67	L1805	US 45 (LaGrange Rd)	111th St	Cook	CY	L-2
68	L1810	US 12/20 (95th St)	IL 43 (Harlem Ave)	Cook	CB	L-2
69	L1823	US 30 (Lincoln Hwy)	Torrence Ave	Cook	CS	L-2
70	L1825	US 45 (LaGrange Rd)	IL 83 (Cal Sag Rd)	Cook	CE	L-2
71	L1827	IL 50 (Cicero Ave)	127th St	Cook	CH	L-2
72	L1830	IL 1 (Halsted Ave)	I-80 / I-294 (Tollway)	Cook	CK	L-2
73	L1835	IL 1 (Halsted Ave)	Ridge Rd	Cook	CA	L-2
74	L1837	IL 43 (Harlem Ave)	143rd St	Cook	CN	L-2
75	L1845	IL 83 (Kingery Hwy)	N IL 171 (Archer Ave)	Cook	CC	L-2
76	L1850	IL 83 (Kingery Hwy)	S IL 171 (Archer Ave)	Cook	CD	L-2
77	L1860	111th St	Austin Ave	Cook	CF	L-2
78	L1870	111th St	Laramie Ave	Cook	CG	L-2
79	L1887	US 6 (159th St)	Park Ave	Cook	CL	L-2
80	L1888	US 6 (159th St)	Center Ave	Cook	CM	L-2
81	L1902	US 20 (Lake St)	Bloomington Rd	DuPage	PT	L-2
82	L1903	US 20 (Lake St)	Walnut St	DuPage	DW	L-2
83	L1905	US 34 (Ogden Ave)	IL 59	DuPage	DB	L-2
84	L1910	US 34 (Ogden Ave)	IL 83 (Kingery Highway)	DuPage	DA	L-2
85	L1912	IL 38 (Roosevelt Rd)	York Rd	DuPage	DH	L-2
86	L1913	IL 38 (Roosevelt Rd)	IL 83 NB Ramp	DuPage	DU	L-2
87	L1914	IL 83 (Kingery Hwy)	IL 56 EB Ramp	DuPage	DV	L-2
88	L1922	IL 53	I-88 (Tollway)	DuPage	DS	L-2
89	L1925	IL 53	IL 56 (Butterfield Rd)	DuPage	DM	L-2
90	L1935	IL 56 (Butterfield Rd)	IL 59	DuPage	DD	L-2
91	L1940	IL 56 (Butterfield Rd)	Highland Ave	DuPage	DJ	L-2
92	L1950	IL 59	Aurora Rd	DuPage	DC	L-2
93	L1959	IL 64 (North Ave)	IL 83 (Kingery Highway)	DuPage	DN	L-2
94	L1960	IL 64 (North Ave)	Main St (in Lombard)	DuPage	DE	L-2
95	L1962	IL 64 (North Ave)	Kramer Ave	DuPage	PY	L-2
96	L1963	IL 64 (North Ave)	Ardmore ave	DuPage	PZ	L-2
97	L1964	IL 64 (North Ave)	Swift Rd	DuPage	PH	L-2
98	L1965	IL 64 (North Ave)	Main St (Glen Ellyn Rd)	DuPage	PI	L-2
99	L1966	IL 64 (North Ave)	Evergreen Ave	DuPage	PJ	L-2
100	L1967	IL 64 (North Ave)	Linda Ave	DuPage	PK	L-2
101	L1968	IL 64 (North Ave)	Schmale Rd	DuPage	PL	L-2
102	L1969	IL 64 (North Ave)	Gary Ave	DuPage	PM	L-2
103	L1970	IL 64 (North Ave)	Kuhn Rd	DuPage	PN	L-2
104	L1971	IL 64 (North Ave)	Morton Rd	DuPage	PO	L-2
105	L1972	IL 64 (North Ave)	St. Charles Rd	DuPage	PP	L-2
106	L1973	IL 64 (North Ave)	Prince Crossing Rd	DuPage	PR	L-2
107	L1974	IL 64 (North Ave)	Woodcrest Dr	DuPage	PS	L-2
108	L1975	IL 83 (Kingery Hwy)	55th St	DuPage	DL	L-2
109	L1980	IL 83 (Kingery Hwy)	Bluff Rd	DuPage	DI	L-2
110	L1983	IL 83 (Kingery Hwy)	22nd St (Cermak Rd)	DuPage	DO	L-2
111	L2003	US 20 (Lake St)	IL 47/ IL 72	Kane	KS	L-2
112	L2010	US 20 (Lake St)	Randall Rd	Kane	KX	L-2
113	L2012	US 30 (Briarcliff Rd)	IL 31 (W Lake St)	Kane	KF	L-2
114	L2015	IL 47	US 30 & IL 56	Kane	KG	L-2
115	L2045	IL 38 (Roosevelt Rd)	IL 47	Kane	KO	L-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
116	L2050	IL 47	Big Timber Rd	Kane	KE	L-2
117	L2065	IL 56 (Butterfield Rd)	Kirk Rd	Kane	KR	L-2
118	L2070	IL 72 (Higgins Rd)	Randall Rd	Kane	KT	L-2
119	L2075	IL 56 (Butterfield Rd)	Galena Rd	Kane	KZ	L-2
120	L2103	US 30 (Briarcliff Rd)	US 34 (Owesgo Rd)	Kendall	EA	L-2
121	L2203	US 12 / IL 59	IL 134 (Long Lake Rd)	Lake	LX	L-2
122	L2207	Deerfield Rd	Northland Ave	Lake	LA	L-2
123	L2211	US 41 (Skokie Highway)	Deerfield Rd	Lake	LE	L-2
124	L2215	US 41 (Skokie Highway)	IL 60 (Town Line Rd)	Lake	LR	L-2
125	L2217	US 41 (Skokie Highway)	IL 120 (Belvidere Rd)	Lake	LB	L-2
126	L2220	US 41 (Skokie Highway)	IL 132 (Grand Ave)	Lake	LG	L-2
127	L2221	US 41 (Skokie Highway)	IL 173 (Rosecrans Rd)	Lake	LU	L-2
128	L2224	US 41 (Skokie Highway)	Kelly Rd	Lake	LV	L-2
129	L2227	US 41 (I-94)	Russell Rd	Lake	LL	L-2
130	L2230	US 41 (Skokie Highway)	Washington St	Lake	LD	L-2
131	L2235	IL 120 (Belvidere Rd)	Cohasset Ct	Lake	VA	L-2
132	L2236	IL 120 (Belvidere Rd)	Greenleaf St	Lake	VB	L-2
133	L2237	IL 120 (Belvidere Rd)	IL 43 (Waukegan Rd)	Lake	VC	L-2
134	L2239	IL 120 (Belvidere Rd)	Lakehurst Rd	Lake	VD	L-2
135	L2243	US 41 (Skokie Highway)	West Park Ave	Lake	LP	L-2
136	L2245	IL 21 (Milwaukee Ave)	IL 120 (Belevidere Rd)	Lake	LF	L-2
137	L2247	IL 21 (Milwaukee Ave)	I-94 (Tollway)	Lake	LC	L-2
138	L2250	IL 21 (Milwaukee Ave)	IL 137 (Buckley Rd)	Lake	LM	L-2
139	L2255	IL 43 (Waukegan Rd)	IL 137 (Buckley Rd)	Lake	LN	L-2
140	L2256	IL 59	Grass Lake Rd	Lake	LK	L-2
141	L2265	IL 120 (Belevidere Rd)	O'Plaine Rd	Lake	LO	L-2
142	L2267	IL 60 (Town Line Rd)	Riverwoods Rd	Lake	VE	L-2
143	L2268	IL 60 (Town Line Rd)	Saunders Rd	Lake	VF	L-2
144	L2270	IL 131 (Green Bay Rd)	IL 137 (Buckley Rd)	Lake	LY	L-2
145	L2274	IL 137 (Buckley Rd)	I-94 (Tollway)	Lake	LJ	L-2
146	L2275	IL 137 (Sheridan Rd)	Wadsworth Rd	Lake	LW	L-2
147	L2276	IL 137 (Sheridan Rd)	MLK Jr Dr	Lake	LQ	L-2
148	L2280	Amstutz Highway	Grand Ave	Lake	B	L-2
149	L2285	Amstutz Highway	Greenwood Ave	Lake	A	L-2
150	L2290	IL 22 (Lake Zurich Rd)	Ela Rd	Lake	LZ	L-2
151	L2305	US 14 (Northwest Hwy)	IL 31	McHenry	MA	L-2
152	L2310	US 14 (Northwest Hwy)	IL 47	McHenry	MC	L-2
153	L2315	US 14 (Northwest Hwy)	IL 176 (Terra Cotta Ave)	McHenry	MZ	L-2
154	L2330	IL 47	S IL 176 (Terra Cotta Ave)	McHenry	MS	L-2
155	L2335	IL 47	N IL 176 (Terra Cotta Ave)	McHenry	MN	L-2
156	L2402	US 6 (Southwest Hwy)	I-355	Will	WZ	L-2
157	L2404	US 30 (Plainfield Rd)	Larkin Ave	Will	WA	L-2
158	L2415	US 30 (Cass St)	Stevens St	Will	WD	L-2
159	L2420	US 45	US 52	Will	WW	L-2
160	L2428	IL 7 (159th St)	I-355	Will	WY	L-2
161	L2430	IL 7 (Renwick Rd)	IL 53 (Broadway St)	Will	WB	L-2
162	L2435	IL 50 (Cicero Ave)	Governors Highway	Will	WG	L-2
163	L2445	IL 53 (Independence Ave)	Joliet Rd	Will	WP	L-2
164	L2448	IL 171 (Archer Ave)	I-355	Will	WQ	L-2
165	L2452	IL 113 (Main St)	IL 53(Front) & IL129(Washington)	Will	HB	L-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
166	L2455	IL 394	Bemes Rd	Will	WK	L-2
167	L2460	IL 394	Faithorn Rd / Burville Rd	Will	WL	L-2
168	L2465	IL 394	Cottage Grove Ave	Will	WM	L-2
169	L2470	IL 394	Elms Court Rd	Will	WT	L-2
170	L2475	IL 394	Exchange St	Will	WO	L-2
171	L2478	IL 394	IL 1	Will	WV	L-2
172	L2480	IL 394	Goodnow Rd	Will	WU	L-2
173	L2485	IL 394	Richton Rd	Will	WR	L-2
174	L2490	IL 394	Steger Rd	Will	WS	L-2

1	L1617	US 14 (Dempster St)	IL 43 (Waukegan Rd)	Cook	XH	L-3
2	L1625	US 14 (NW Hwy)	CN RR / Soo RR	Cook	AE	L-3
3	L1643	US 45/IL 21 (Milwaukee)	IL 68 (Dundee Rd)	Cook	XG	L-3
4	L1655	IL 58 (Golf Rd)	Wolf Rd / CN RR	Cook	AJ	L-3
5	L1666	IL 50 (Cicero Ave)	Touhy Ave	Cook	XJ	L-3
6	L1670	IL 62 (Algonquin Rd)	Palatine Rd	Cook	AP	L-3
7	L1690	Palatine Rd	Schoenbeck Rd	Cook	AU	L-3
8	L1711	US12/45 (Mannheim Rd)	US 20 (Lake St)	Cook	YC	L-3
9	L1712	US12/45 (Mannheim Rd)	Proviso RR Bridge	Cook	YD	L-3
10	L1718	IL 43 (Harlem Ave)	Division St	Cook	YF	L-3
11	L1719	IL 43 (Harlem Ave)	Augusta Blvd	Cook	YG	L-3
12	L1720	IL 43 (Harlem Ave)	Chicago Ave	Cook	YH	L-3
13	L1721	IL 43 (Harlem Ave)	Ontario St	Cook	YI	L-3
14	L1722	IL 43 (Harlem Ave)	US 20 (Lake St)	Cook	YJ	L-3
15	L1723	IL 43 (Harlem Ave)	South Blvd	Cook	YK	L-3
16	L1725	IL 43 (Harlem Ave)	Randolph St	Cook	YM	L-3
17	L1726	IL 43 (Harlem Ave)	Washington St	Cook	YN	L-3
18	L1727	IL 43 (Harlem Ave)	Madison St	Cook	YO	L-3
19	L1728	IL 43 (Harlem Ave)	IL 38 (Roosevelt Rd)	Cook	YP	L-3
20	L1729	IL 43 (Harlem Ave)	16th St	Cook	YR	L-3
21	L1765	Lake Shore Dr	Sign Only @ I-55 Ramp	Cook	C1E	L-3
22	L1766	Lake Shore Dr	39th St (Cant Sign only)	Cook	BQ	L-3
23	L1767	Lake Shore Dr	35th St (Cant Sign only)	Cook	YE	L-3
24	L1768	Lake Shore Dr	27th St (Cant Sign only)	Cook	YQ	L-3
25	L1775	IL 38 (Roosevelt Rd)	Austin Blvd	Cook	BP	L-3
26	L1780	IL 38 (Roosevelt Rd)	East Ave	Cook	BE	L-3
27	L1785	IL 38 (Roosevelt Rd)	Oak Park Ave	Cook	BO	L-3
28	L1790	IL 38 (Roosevelt Rd)	Ridgeland Ave	Cook	BR	L-3
29	L1792	IL 38 (Roosevelt Rd)	Foster Ave	Cook	YS	L-3
30	L1796	IL 43 (Harlem Ave)	Cullom Ave	Cook	YU	L-3
31	L1815	US 30 (Lincoln Highway)	IL 43 (Harlem Ave)	Cook	CR	L-3
32	L1820	US 30 (Lincoln Highway)	Governors Hwy / Crawford Ave	Cook	CR	L-3
33	L3110	Little Calumet River	I-94 (Bishop Ford)	Cook	324.6	L-3
34	L3115	Little Calumet River	IL 1 (Halsted St)	Cook	320.1	L-3
35	L3210	Cal-Sag Channel	Ashland Ave	Cook	319.0	L-3
36	L3215	Cal-Sag Channel	I-57	Cook	318.9	L-3
37	L3217	Cal-Sag Channel	Western Ave	Cook	318.0	L-3
38	L3220	Cal-Sag Channel	Kedzie Ave	Cook	316.9	L-3
39	L3230	Cal-Sag Channel	IL 50 (Cicero Ave)	Cook	314.9	L-3
40	L3235	Cal-Sag Channel	127th St	Cook	314.2	L-3
41	L3240	Cal-Sag Channel	IL 43 (Harlem Ave)	Cook	311.5	L-3
42	L3245	Cal-Sag Channel	IL 7 (Southwest Highway)	Cook	310.7	L-3
43	L3250	Cal-Sag Channel	US 45 (96th Ave)	Cook	308.4	L-3
44	L3255	Cal-Sag Channel	IL 83 (Kingery Highway)	Cook	304.1	L-3

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
45	L3405	Chicago San & Ship Canal	Central Ave	Cook	316.2	L-3
46	L3410	Chicago San & Ship Canal	NB IL 43 (Harlem Ave)	Cook	314.0	L-3
47	L3415	Chicago San & Ship Canal	SB IL 43 (Harlem Ave)	Cook	313.9	L-3
48	L3435	Chicago San & Ship Canal	US 12/20/45 (LaGrange Rd)	Cook	309.4	L-3
49	L3440	Chicago San & Ship Canal	Willow Springs Rd	Cook	307.9	L-3
50	L3445	Chicago San & Ship Canal	IL 83 (Kingery Highway)	Cook	304.1	L-3
51	L3450	Chicago San & Ship Canal	Lemont Rd (State St)	Cook	300.5	L-3
52	L3455	Chicago San & Ship Canal	IL 7 (9th St)	Cook	292.7	L-3
53	L1906	US 20 (Lake St)	Marcus Cinema	DuPage	UA	L-3
54	L1907	US 20 (Lake St)	Lombard Rd	DuPage	UB	L-3
55	L1908	US 20 (Lake St)	Itasca Rd	DuPage	UC	L-3
56	L1909	US 20 (Lake St)	Mill Rd	DuPage	UD	L-3
57	L1911	US 20 (Lake St)	JFK Dr	DuPage	UE	L-3
58	L1915	IL 38 (Roosevelt Rd)	Lorraine St	DuPage	DG	L-3
59	L1916	IL 38 (Roosevelt Rd)	President St	DuPage	DQ	L-3
60	L1917	IL 38 (Roosevelt Rd)	Naperville Rd	DuPage	DX	L-3
61	L1918	IL 38 (Roosevelt Rd)	Main St {Wheaton}	DuPage	DY	L-3
62	L1919	IL 38 (Roosevelt Rd)	West St	DuPage	DZ	L-3
63	L1920	IL 38 (Roosevelt Rd)	Gary's Mill Rd	DuPage	PF	L-3
64	L1921	IL 38 (Roosevelt Rd)	County Farm Rd	DuPage	PQ	L-3
65	L1930	IL 53	BNSF RR Bridge	DuPage	DR	L-3
66	L1945	22 nd St (Cermak Rd)	York Rd	DuPage	PA	L-3
67	L1951	IL 59	Gary's Mill Rd	DuPage	PG	L-3
68	L1955	IL 64 (North Ave)	Berteau Ave	DuPage	PU	L-3
69	L1956	IL 64 (North Ave)	Emroy Ave	DuPage	PV	L-3
70	L1957	IL 64 (North Ave)	York Rd	DuPage	PW	L-3
71	L1958	IL 64 (North Ave)	Myrtle Ave	DuPage	PX	L-3
72	L1985	IL 83 (Kingery Hwy)	St. Charles Rd	DuPage	DT	L-3
73	L1998	IL 64 (North Ave)	Sign Only @ Harvard Ave	DuPage	D5E	L-3
74	L1999	I-290	Sign Only @ CN RR	DuPage	D3E	L-3
75	L2020	IL 31 (State St)	W Big Timber Rd	Kane	KH	L-3
76	L2025	IL 31 (State St)	E Big Timber Rd	Kane	KJ	L-3
77	L2030	IL 31(2nd St / State St)	Indian Mounds Rd	Kane	KM	L-3
78	L2035	IL 31 (State St)	Judson Collage Entrance	Kane	KL	L-3
79	L2040	IL 31 (State St)	River Rd	Kane	KK	L-3
80	L2047	IL 38 (Roosevelt Rd)	14th St	Kane	KN	L-3
81	L2055	IL 47	Plank Rd	Kane	KP	L-3
82	L2060	IL 47	Galena Rd	Kane	KV	L-3
83	L2067	IL 64 (North Ave)	Burlington Rd	Kane	KW	L-3
84	L2105	US 30	IL 47	Kendall	EB	L-3
85	L2209	IL 43 (Waukegan Rd)	High School Dr {Deerfield}	Lake	LT	L-3
86	L2210	IL 43 (Waukegan Rd)	Osterman Ave	Lake	LI	L-3
87	L2228	US 41 (I-94)	Sign Only @ Russell Rd	Lake	L2E	L-3
88	L2260	IL 120 (Belevidere Rd)	Mill Rd (Wildwood Rd)	Lake	LH	L-3
89	L2298	US 41 (Skokie Highway)	Sign Only @ Deerfield Rd	Lake	L1E	L-3
90	L2405	US 30 (Lincoln Rd)	IL 126 (Lockport Rd)	Will	WN	L-3
91	L2410	US 30 (Cass St)	Pilcher Park Entrance	Will	WC	L-3
92	L2422	US 45 (96 th Ave)	191 st St	Will	WX	L-3
93	L2425	IL 1 (Halsted St)	Union	Will	WF	L-3
94	L2440	IL 53 (Broadway St)	EJE RR	Will	WH	L-3

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Cab / MP.	Pay Item
95	L2450	IL 171 (Archer Ave)	EJE RR	Will	WJ	L-3
96	L2495	I-55	Sign Only @ Arsenal Rd	Will	W5E	L-3
97	L2496	I-55	Sign Only @ IL 129	Will	W7E	L-3
98	L2498	I-80	Sign Only @ Richard St	Will	W3E	L-3
99	L3535	Des Plaines River	I-80 (Access by Boat)	Will	287.0	L-3
100	L3545	Des Plaines River	I-55	Will	277.9	L-3

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Street Address	Pay Item
1	PS02	I-94	Winnetka Rd	Cook	18 N West Frontage, Northfield	P-1
2	PS03	I-94	Caldwell Ave / Peterson Ave	Cook	5700 N. Cicero Ave, Chicago	P-1
3	PS04	I-290	E of 1st Ave	Cook	8107 W I-290, Forest Park	P-1
4	PS05	I-290	Des Plaines Ave	Cook	701 W. Van Buren, Chicago	P-1
5	PS09	US 45 (Mannheim Rd)	US 20 (Lake St)	Cook	1549 Mannheim Rd, Stone Park	P-1
6	PS10	US 14 (Dempster)	IL 21 (Milwaukee Ave)	Cook	8104 W. Dempster St, Niles	P-1
7	PS21	I-94	72nd St	Cook	3 E. 72nd St, Chicago	P-1
8	PS22	I-90/94	Fulton Ave	Cook	240 N. Union Ave, Chicago	P-1
9	PS23	I-90/94	Roscoe St	Cook	3415 N. Central Park, Chicago	P-1
10	PS24	I-190	E of US 12/45 (Mannheim)	Cook	9998 W. Bryn Mawr, Rosemont	P-1
11	PS25	US 12/20 (95th St)	IL 43 (Harlem Ave)	Cook	7201 W. 95th St, Bridgeview	P-1
12	PS26	I-90/94	Roosevelt Rd	Cook	1125 S. Union Ave, Chicago	P-1
13	PS27	I-94	110th St	Cook	10925 S. Doty Rd, Chicago	P-1
14	PS28	IL 50 (Cicero Ave)	US 34 (Ogden Ave)	Cook	2618 S. Cicero Ave, Cicero	P-1
15	PS29	I-90/94	Wallace St	Cook	2422 S. Archer Ave, Chicago	P-1
16	PS30	I-55	Homan Ave	Cook	3510 S. Kedzie Ave, Chicago	P-1
17	PS31	111th St	Central Ave	Cook	5300 W. 111th St, Oak Lawn	P-1
18	PS33	Palatine Rd	IL 21 (Milwaukee Ave)	Cook	699 Milwaukee Ave, Prospect Hts	P-1
19	PS35	I-57	127th St	Cook	12950 S. Paulina St, Blue Island	P-1
20	PS36	IL 43 (Harlem Ave)	176th St	Cook	17701 S. Harlem, Tinley Park	P-1
21	PS34	I-290	Emroy Ave	DuPage	395 N. Emroy Ave, Elmhurst	P-1
22	PS44	IL 83 (Kingery Hwy)	S of IL 64 (North Ave)	DuPage	100 S. IL 83, Villa Park	P-1
23	PS42	IL 47	IL 72	Kane	15N300 IL 47, Hampshire	P-1
24	PS39	IL 60 (Kennedy Rd)	W of US 41 (Skokie Hwy)	Lake	1391 Kennedy Rd, Lake Forest	P-1
25	PS40	US 45 (Lake Ave)	N of IL 60 (Towne Line Rd)	Lake	1499 S. Lake Ave, Mundelein	P-1
26	PS46	US 41 (Skokie Hwy)	Clavey Rd	Lake	1448 Clavey Rd, Highland Park	P-1
27	PS52	IL 59	IL 126	Will	14706 S. IL 59, Plainfield	P-1

1	PS07	I-290	Wells St	Cook	530 S. Franklin St, Chicago	P-2
2	PS08	US 14 (NW Hwy)	1/2 Mi E of US 12/45	Cook	865 NW Hwy, Des Plaines	P-2
3	PS11	IL 50 (Cicero Ave)	158th St	Cook	15801 S. Cicero Ave, Oak Forest	P-2
4	PS12	IL 64 (North Ave)	W of 25th Ave	Cook	2600W. North Ave, Melrose Park	P-2
5	PS13	US 41 (Skokie Blvd)	S of Oakton St	Cook	7846 N. Skokie Blvd, Skokie	P-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Street Address	Pay Item
6	PS14	Ashland Ave	139th St	Cook	13901 S. Ashland Ave, Dixmoor	P-2
7	PS15	79th St	Kedzie Ave	Cook	3200W. 79th St, Chicago	P-2
8	PS16	IL 72 (Higgins Rd)	E of US 12/45 (Mannheim)	Cook	10225 W Higgins Rd, Rosemont	P-2
9	PS17	IL 58 (Golf Rd)	US 45 (DesPlaines River Rd)	Cook	1855 W Golf Rd, Des Plaines	P-2
10	PS18	US 6 (159th St)	Park Ave	Cook	200E. 162nd St, South Holland	P-2
11	PS19	US 6 (159th St)	IL 50 (Cicero Ave)	Cook	4900 W. 159th St, Oak Forest	P-2
12	PS20	I-290	W of Wolf Rd	Cook	5005 W. I-290, Hillside	P-2
13	PS32	IL 64 (North Ave)	1st Ave	Cook	8501 W. North Ave, Melrose Park	P-2
14	PS51	127th St	E. of Crawford Ave	Cook	3559 W. 127th St, Alsip	P-2
15	PS47	IL 59	North Aurora Rd	DuPage	315 N. IL 59, Naperville	P-2
16	PS48	IL 56 (Butterfield Rd)	W of IL 59	DuPage	30W400 Butterfield Rd,Warrenville	P-2
17	PS37	US 41 (Skokie Hwy)	IL 176 (Rockland Rd)	Lake	437 Skokie Highway, Lake Bluff	P-2
18	PS38	US 41 (Skokie Hwy)	Deerpath Ave	Lake	301 N. Skokie Highway, Lake Forest	P-2
19	PS41	US 41 (Skokie Hwy)	N of IL 176 (Rockland Rd)	Lake	29315 N. Skokie Highway, Knollwood	P-2
20	PS43	US 41 (Skokie Hwy)	N of IL 132 (Grand Ave)	Lake	1331 N. Skokie Highway, Gurnee	P-2
21	PS50	IL 22 (Half Day Rd)	US 41 (Skokie Highway)	Lake	1232 Half Day Rd, Highland Park	P-2

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
1	S2005	I-57 NB	IL 1 (Halsted St) Ent	Cook	A2	Ramp	S-1
2	S3075	I-90 OB NB Exit	IL 171 (Cumberland Ave)	Cook	E113	Ramp	S-1
3	S3080	I-90 OB SB Entrance	IL 171 (Cumberland Ave)	Cook	E115	Ramp	S-1
4	S3085	I-90 IB Entrance	IL 171 (Cumberland Ave)	Cook	E120	Ramp	S-1
5	S3095	I-90 IB Entrance	Canfield Ave	Cook	F118	Ramp	S-1
6	S3105	I-90	IL 43 (Harlem Ave)	Cook	F109	Ramp	S-1
7	S3110	I-90	IL 43 (Harlem Ave)	Cook	F114	Ramp	S-1
8	S3125	I-90	IL 43 (Harlem Ave)	Cook	G112	Ramp	S-1
9	S3135	I-90	Sayre Ave	Cook	G110	Ramp	S-1
10	S3140	I-90	Nagle Ave	Cook	H101	Ramp	S-1
11	S3155	I-90	Bryn Mawr Ave	Cook	H106	Ramp	S-1
12	S3165	I-90	Foster Ave	Cook	H97	Ramp	S-1
13	S3175	I-90	Foster Ave	Cook	I102	Ramp	S-1
14	S3210	I-90	Lawrence Ave	Cook	J91	Ramp	S-1
15	S3215	I-90	Lawrence Ave	Cook	J94A	Ramp	S-1
16	S3240	I-90/94	Montrose Ave	Cook	J92	Ramp	S-1
17	S3245	I-90/94	Keeler Ave	Cook	K77	Ramp	S-1
18	S3270	I-90/94	Pulaski Rd	Cook	K84	Ramp	S-1
19	S3275	I-90/94	IL 19 (Irving Park Rd)	Cook	K86	Ramp	S-1
20	S3310	I-90/94	Avondale Ave	Cook	L76	Ramp	S-1
21	S3320	I-90/94	Kimball Ave	Cook	L65	Ramp	S-1
22	S3325	I-90/94	Kimball Ave	Cook	L72	Ramp	S-1
23	S3340	I-90/94	Kedzie Ave	Cook	L70	Ramp	S-1
24	S3350	I-90/94	California Ave	Cook	M57	Ramp	S-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
25	S3365	I-90/94	Sacramento Blvd	Cook	M66	Ramp	S-1
26	S3385	I-90/94	Diversey Ave	Cook	M62	Ramp	S-1
27	S3390	I-90/94	Fullerton Ave	Cook	N51	Ramp	S-1
28	S3405	I-90/94	Fullerton Ave	Cook	N58	Ramp	S-1
29	S3415	I-90/94	Webster Ave	Cook	N56	Ramp	S-1
30	S3420	I-90/94	Armitage Ave	Cook	O54	Ramp	S-1
31	S3445	I-90/94	IL 64 (North Ave)	Cook	P41A	Ramp	S-1
32	S3450	I-90/94	IL 64 (North Ave)	Cook	P48	Ramp	S-1
33	S3460	I-90/94	Division St	Cook	R39	Ramp	S-1
34	S3465	I-90/94	Division St	Cook	R44	Ramp	S-1
35	S3480	I-90/94	Augusta Blvd	Cook	R42	Ramp	S-1
36	S3485	I-90/94	Ogden Ave	Cook	R35	Ramp	S-1
37	S3525	I-90/94	Lake St	Cook	Y28	Ramp	S-1
38	S3550	I-90/94	Randolph St	Cook	Y29	Ramp	S-1
39	S3570	I-90/94	Washington Blvd	Cook	Y25	Ramp	S-1
40	S3600	I-90/94	Monroe St	Cook	Y17	Ramp	S-1
41	S3635	I-90/94	Adams St	Cook	Z13	Ramp	S-1
42	S4020	I-94	Elston Ave	Cook	B4	Ramp	S-1
43	S4025	I-94	Foster Ave	Cook	B5	Ramp	S-1
44	S4040	I-94	Peterson Ave	Cook	C8	Ramp	S-1
45	S4045	I-94	Peterson Ave	Cook	C9	Ramp	S-1
46	S4050	I-94	Peterson Ave	Cook	C10	Ramp	S-1
47	S4065	I-94	Touhy Ave	Cook	E12	Ramp	S-1
48	S4070	I-94	Touhy Ave	Cook	E15	Ramp	S-1
49	S4075	I-94	Touhy Ave	Cook	E16	Ramp	S-1
50	S4080	I-94	Touhy Ave	Cook	E17	Ramp	S-1
51	S4100	I-94	Dempster St	Cook	H21	Ramp	S-1
52	S4105	I-94	Dempster St	Cook	H22	Ramp	S-1
53	S4110	I-94	Dempster St	Cook	H23	Ramp	S-1
54	S4115	I-94	Dempster St	Cook	H24	Ramp	S-1
55	S5015	I-94 NB	95th St Ent	Cook	O86	Ramp	S-1
56	S5035	I-94 SB	87th St Ent	Cook	O85	Ramp	S-1
57	S5040	I-94 NB	87th St Ent	Cook	P82	Ramp	S-1
58	S5050	I-94 SB	83rd St Ent	Cook	P78	Ramp	S-1
59	S5055	I-94 NB	83 rd St Ent	Cook	P79	Ramp	S-1
60	S5070	I-94 NB	79th St Ent	Cook	P76	Ramp	S-1
61	S5075	I-94 SB	79th St Ent	Cook	P77	Ramp	S-1
62	S5085	I-94 SB	76th St Ent	Cook	R71	Ramp	S-1
63	S5105	I-94 NB	75th St Ent	Cook	R72	Ramp	S-1
64	S5115	I-94 NB	71st St Ent	Cook	R66	Ramp	S-1
65	S5120	I-94 SB	71st St Ent	Cook	R67	Ramp	S-1
66	S5125	I-94 SB	67th St Ent	Cook	R63	Ramp	S-1
67	S5145	I-90/94	63 rd St Ent	Cook	S57	Ramp	S-1
68	S5160	I-90/94 SB	59 th St Ent	Cook	S62	Ramp	S-1
69	S5195	I-90/94 SB	55 th St Ent	Cook	T47	Ramp	S-1
70	S5210	I-90/94 NB	55 th St Ent	Cook	T52	Ramp	S-1
71	S5225	I-90/94	51st St	Cook	U41	Ramp	S-1
72	S5235	I-90/94	51st St	Cook	U46	Ramp	S-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
73	S5250	I-90/94 SB	43 rd St Ent	Cook	35A	Ramp	S-1
74	S5255	I-90/94 NB	43 rd St Ent	Cook	V42	Ramp	S-1
75	S5290	I-90/94 SB	39 th St Ent	Cook	31	Ramp	S-1
76	S5385	I-90/94	Roosevelt Rd	Cook	C5	Ramp	S-1
77	S5390	I-90/94	Roosevelt Rd	Cook	C6	Ramp	S-1
78	S5405	I-90/94	Taylor St	Cook	D4	Ramp	S-1
79	S6255	I-94 Ford NB	99th Pl Wabash Ent	Cook	M2	Ramp	S-1
80	S8005	I-290	Canal St	Cook	F0	Ramp	S-1
81	S8040	I-290	Ashland Ave	Cook	G8	Ramp	S-1
82	S8060	I-290	Damen Ave & Paulina St	Cook	H11A	Ramp	S-1
83	S8085	I-290	Western Ave	Cook	H15	Ramp	S-1
84	S8095	I-290	California Ave	Cook	H16	Ramp	S-1
85	S8105	I-290	Sacramento Blvd	Cook	I19	Ramp	S-1
86	S8110	I-290	Homan Ave	Cook	I20	Ramp	S-1
87	S8120	I-290	Independence Blvd	Cook	J22	Ramp	S-1
88	S8135	I-290	Independence Blvd	Cook	J27	Ramp	S-1
89	S8140	I-290	Kostner Ave	Cook	J26	Ramp	S-1
90	S8160	I-290	Cicero Ave	Cook	K33	Ramp	S-1
91	S8165	I-290	Laramie Ave	Cook	K30	Ramp	S-1
92	S8175	I-290	Central Ave	Cook	L32	Ramp	S-1
93	S8195	I-290	Central Ave	Cook	L39	Ramp	S-1
94	S8210	I-290	Austin Blvd	Cook	M43	Ramp	S-1
95	S8230	I-290	IL 43 (Harlem Ave)	Cook	M40	Ramp	S-1
96	S8240	I-290	IL 43 (Harlem Ave)	Cook	M49	Ramp	S-1
97	S8255	I-290	Des Plaines Ave	Cook	N53	Ramp	S-1
98	S8265	I-290	IL 1717 (1st Ave)	Cook	O48	Ramp	S-1
99	S8280	I-290	IL 1717 (1st Ave)	Cook	O59	Ramp	S-1
100	S8285	I-290	9th Ave	Cook	P52	Ramp	S-1
101	S8295	I-290	17th Ave	Cook	P54	Ramp	S-1
102	S8310	I-290	17th Ave	Cook	P65	Ramp	S-1
103	S8315	I-290	25th Ave	Cook	R58	Ramp	S-1
104	S8320	I-290	25th Ave	Cook	R60	Ramp	S-1
105	S8340	I-290	Addison Creek	Cook	R69	Ramp	S-1
106	S8345	I-290	Mannheim Rd SE	Cook	S64	Ramp	S-1
107	S8350	I-290	Mannheim Rd SW	Cook	S66	Ramp	S-1
108	S8360	I-290	Mannheim Rd NE	Cook	S71	Ramp	S-1
109	S8370	I-290	Mannheim Rd NW	Cook	S75	Ramp	S-1
110	S8375	I-290	Hillside Ave	Cook	T70	Ramp	S-1
111	S1400	I-55	Woodward Ave	DuPage	76	Ramp	S-1
112	S9030	I-290	St. Charles Rd	DuPage	W80	Ramp	S-1
113	S9035	I-290	St. Charles Rd	DuPage	W82	Ramp	S-1
114	S9040	I-290	St. Charles Rd	DuPage	W83	Ramp	S-1
115	S9045	I-290	St. Charles Rd	DuPage	W85	Ramp	S-1
116	S9055	I-290	IL 64 (North Ave)	DuPage	X86	Ramp	S-1
117	S9075	I-290	IL 64 (North Ave)	DuPage	X90	Ramp	S-1
118	S9130	I-290	IL 83 (Kingery Highway)	DuPage	A101	Ramp	S-1
119	S9140	I-290	IL 83 (Kingery Highway)	DuPage	A103	Ramp	S-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
1	S1000	I-55	Martin Luther King Dr	Cook	B0	Cabinet	S-2
2	S1005	I-55	Martin Luther King Dr	Cook	B1	Cabinet	S-2
3	S1010	I-55	State St	Cook	B3	Cabinet	S-2
4	S1015	I-55	26th St & Wentworth Ave	Cook	C2	Cabinet	S-2
5	S1020	I-55	26th St & Wentworth Ave	Cook	C5	Cabinet	S-2
6	S1025	I-55	W of Wentworth Ave	Cook	C4	Cabinet	S-2
7	S1030	I-55	W of Wentworth Ave	Cook	C7	Cabinet	S-2
8	S1035	I-55	I-90/94 Interchange	Cook	Y15	Cabinet	S-2
9	S1040	I-55	I-90/94 Interchange	Cook	Y16	Cabinet	S-2
10	S1045	I-55	I-90/94 Interchange	Cook	Y17	Cabinet	S-2
11	S1047	I-55	I-90/94 Cross Connect	Cook	MCD 18	Cabinet	S-2
12	S1050	I-55	I-90/94 Interchange	Cook	Y18	Cabinet	S-2
13	S1055	I-55	Archer Ave & Mary St	Cook	6	Cabinet	S-2
14	S1060	I-55	Lock St	Cook	8	Cabinet	S-2
15	S1065	I-55	Wood St	Cook	10	Cabinet	S-2
16	S1075	I-55	Hoyne Ave	Cook	12	Cabinet	S-2
17	S1080	I-55	Penn Central RR	Cook	14	Cabinet	S-2
18	S1100	I-55	Kedzie Ave & California Ave	Cook	16	Cabinet	S-2
19	S1105	I-55	Kedzie Ave & California Ave	Cook	18	Cabinet	S-2
20	S1110	I-55	Kedzie Ave & California Ave	Cook	20	Cabinet	S-2
21	S1115	I-55	East of Pulaski Rd (ATSF RR)	Cook	9	Cabinet	S-2
22	S1120	I-55	Pulaski Rd	Cook	11	Cabinet	S-2
23	S1125	I-55	Pulaski Rd	Cook	22	Cabinet	S-2
24	S1130	I-55	IL 50 (Cicero Ave)	Cook	13	Cabinet	S-2
25	S1135	I-55	IL 50 (Cicero Ave)	Cook	TDC1	Cabinet	S-2
26	S1140	I-55	IL 50 (Cicero Ave) OB Exit	Cook	15	Cabinet	S-2
27	S1150	I-55	IL 50 (Cicero Ave) IB RS	Cook	26	Cabinet	S-2
28	S1160	I-55	IL 50 (Cicero Ave)	Cook	24	Cabinet	S-2
29	S1165	I-55	Central Ave	Cook	17	Cabinet	S-2
30	S1170	I-55	Central Ave	Cook	28	Cabinet	S-2
31	S1175	I-55	Central Ave / IL 43 (Harlem Ave)	Cook	30	Cabinet	S-2
32	S1180	I-55	6000W IB RS	Cook	32	Cabinet	S-2
33	S1185	I-55	Central Ave / IL 43 (Harlem Ave)	Cook	19	Cabinet	S-2
34	S1190	I-55	Central Ave / IL 43 (Harlem Ave)	Cook	21	Cabinet	S-2
35	S1195	I-55	IL 43 (Harlem Ave)	Cook	23	Cabinet	S-2
36	S1205	I-55	IL 43 (Harlem Ave)	Cook	34	Cabinet	S-2
37	S1210	I-55	IL 43 (Harlem Ave)	Cook	25	Cabinet	S-2
38	S1215	I-55	IL 43 (Harlem Ave)	Cook	36	Cabinet	S-2
39	S1220	I-55	7500 West	Cook	27	Cabinet	S-2
40	S1225	I-55	Lawndale Ave	Cook	29	Cabinet	S-2
41	S1235	I-55	Lawndale Ave IB	Cook	38	Cabinet	S-2
42	S1240	I-55	Lawndale Ave	Cook	31	Cabinet	S-2
43	S1245	I-55	Lawndale Ave	Cook	40	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
44	S1250	I-55	B&O RR (8300 W)	Cook	42	Cabinet	S-2
45	S1255	I-55	8600 W	Cook	44	Cabinet	S-2
46	S1260	I-55	8800 W	Cook	46	Cabinet	S-2
47	S1265	I-55	9100 W	Cook	P50	Cabinet	S-2
48	S1270	I-55	9700 W	Cook	R43	Cabinet	S-2
49	S1275	I-55	US 12/20/45 (LaGrange Rd)	Cook	R45	Cabinet	S-2
50	S1280	I-55	US 12/20/45 (LaGrange Rd)	Cook	R47	Cabinet	S-2
51	S1285	I-55	US 12/20/45 (LaGrange Rd)	Cook	R52	Cabinet	S-2
52	S1290	I-55	US 12/20/45 (LaGrange Rd) SW	Cook	R54	Cabinet	S-2
53	S1295	I-55	E of Willow Springs Rd	Cook	R49	Cabinet	S-2
54	S1300	I-55	OB E of Willow Springs Rd	Cook	R49A	Cabinet	S-2
55	S1305	I-55	10900 West	Cook	S51	Cabinet	S-2
56	S1310	I-55	10900 West	Cook	S56	Cabinet	S-2
57	S1315	I-55	I-294 Tollway	Cook	S53	Cabinet	S-2
58	S1320	I-55	Joliet Rd	Cook	S55	Cabinet	S-2
59	S1325	I-55	E of County Line Rd	Cook	57	Cabinet	S-2
60	S2000	I-57	C&W RR	Cook	A3	Cabinet	S-2
61	S2010	I-57	IL 1 (Halsted St)	Cook	A5	Cabinet	S-2
62	S2015	I-57	IL 1 (Halsted St)	Cook	B7	Cabinet	S-2
63	S2020	I-57	100th St	Cook	B4	Cabinet	S-2
64	S2025	I-57	104th St	Cook	B6	Cabinet	S-2
65	S2030	I-57	107th St	Cook	C9	Cabinet	S-2
66	S2035	I-57	111th St	Cook	C8	Cabinet	S-2
67	S2040	I-57	111th St	Cook	C11	Cabinet	S-2
68	S2050	I-57	111th St	Cook	D13	Cabinet	S-2
69	S2055	I-57	119th St	Cook	D12	Cabinet	S-2
70	S2060	I-57	119th St	Cook	E14	Cabinet	S-2
71	S2065	I-57	119th St	Cook	E15	Cabinet	S-2
72	S2075	I-57	127th St	Cook	F16	Cabinet	S-2
73	S2080	I-57	127th St	Cook	F19	Cabinet	S-2
74	S2085	I-57	127th St	Cook	G18	Cabinet	S-2
75	S2095	I-57	Cal Sag Channel	Cook	G20	Cabinet	S-2
76	S2100	I-57 IB	B&O RR	Cook	H22	Cabinet	S-2
77	S2105	I-57 IB	IHB RR	Cook	H24	Cabinet	S-2
78	S2110	I-57 IB	1/2 Mi S of IHB RR	Cook	I26	Cabinet	S-2
79	S2115	I-57 OB	1/2 Mi N of IL 83	Cook	I23	Cabinet	S-2
80	S2120	I-57 OB	IL 83 (147th St / Sibley Blvd)	Cook	J25	Cabinet	S-2
81	S2125	I-57 IB	IL 83 (147th St / Sibley Blvd)	Cook	J28	Cabinet	S-2
82	S2135	I-57	I-294 Tollway	Cook	J32	Cabinet	S-2
83	S2140	I-57	N of Kedzie Ave	Cook	K27	Cabinet	S-2
84	S2145	I-57	155th St	Cook	K29	Cabinet	S-2
85	S2155	I-57	US 6 (159th St)	Cook	L33	Cabinet	S-2
86	S2160	I-57	US 6 (159th St)	Cook	L34	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
87	S2165	I-57	US 6 (159th St)	Cook	L35	Cabinet	S-2
88	S2170	I-57	US 6 (159th St)	Cook	L36	Cabinet	S-2
89	S2175	I-57	163rd St	Cook	M37	Cabinet	S-2
90	S2180	I-57	167th St	Cook	N39	Cabinet	S-2
91	S2190	I-57	167th St	Cook	N43	Cabinet	S-2
92	S2195	I-57	167th St	Cook	O83	Cabinet	S-2
93	S2205	I-57	167th St	Cook	O42	Cabinet	S-2
94	S2210	I-57	W of Cicero Ave	Cook	T45	Cabinet	S-2
95	S2215	I-57	1/2 Mi W of Cicero Ave	Cook	T47	Cabinet	S-2
96	S2220	I-57	I-80 Interchange	Cook	T44	Cabinet	S-2
97	S2225	I-57	I-80 Interchange	Cook	T46	Cabinet	S-2
98	S2230	I-57	I-80 Interchange	Cook	T49	Cabinet	S-2
99	S2235	I-57	I-80 Interchange	Cook	U48	Cabinet	S-2
100	S2240	I-57	I-80 Interchange	Cook	U51	Cabinet	S-2
101	S2245	I-57	I-80 Interchange	Cook	U53	Cabinet	S-2
102	S3000	I-190	O'Hare Airport Parking Lot C	Cook	C131	Cabinet	S-2
103	S3005	I-190	US 12/45 (Mannheim Rd)	Cook	C127	Cabinet	S-2
104	S3007	I-190	US 12/45 (Mannheim Rd)	Cook	C127A	Cabinet	S-2
105	S3010	I-190	US 12/45 (Mannheim Rd)	Cook	C129	Cabinet	S-2
106	S3015	I-190	US 12/45 (Mannheim Rd)	Cook	C134	Cabinet	S-2
107	S3020	I-190	US 12/45 (Mannheim Rd)	Cook	C136	Cabinet	S-2
108	S3025	I-190	I-294 Toll Plaza	Cook	C123	Cabinet	S-2
109	S3030	I-190	I-294 Toll Plaza	Cook	C125	Cabinet	S-2
110	S3035	I-190	I-294 Toll Plaza	Cook	C130	Cabinet	S-2
111	S3040	I-190	I-294 Toll Plaza	Cook	C132	Cabinet	S-2
112	S3045	I-190	Des Plaines River Rd	Cook	D119	Cabinet	S-2
113	S3050	I-190	Des Plaines River Rd	Cook	D121	Cabinet	S-2
114	S3055	I-190	Des Plaines River Rd	Cook	D126	Cabinet	S-2
115	S3060	I-190	Des Plaines River Rd	Cook	D128	Cabinet	S-2
116	S3065	I-90	East River Rd	Cook	D124	Cabinet	S-2
117	S3067	I-90	East River Rd	Cook	MCD 6	Cabinet	S-2
118	S3070	I-90	Cumberland Ave	Cook	D122	Cabinet	S-2
119	S3090	I-90	Canfield Ave	Cook	F111	Cabinet	S-2
120	S3100	I-90	IL 43 (Harlem Ave)	Cook	F107	Cabinet	S-2
121	S3115	I-90	IL 43 (Harlem Ave)	Cook	F116	Cabinet	S-2
122	S3120	I-90	IL 43 (Harlem Ave)	Cook	G105	Cabinet	S-2
123	S3130	I-90	Sayre Ave	Cook	G103	Cabinet	S-2
124	S3145	I-90	Nagle Ave	Cook	H108	Cabinet	S-2
125	S3150	I-90	Bryn Mawr Ave	Cook	H99	Cabinet	S-2
126	S3160	I-90	Meade Ave	Cook	H104	Cabinet	S-2
127	S3170	I-90	Foster Ave	Cook	I95	Cabinet	S-2
128	S3180	I-90	Central Ave	Cook	I93	Cabinet	S-2
129	S3185	I-90	Central Ave	Cook	I100	Cabinet	S-2
130	S3190	I-90	Central Ave	Cook	I100A	Cabinet	S-2
131	S3195	I-90	Milwaukee Ave	Cook	I98	Cabinet	S-2
132	S3200	I-90	Lawrence Ave	Cook	J87	Cabinet	S-2
133	S3205	I-90	Lawrence Ave	Cook	J89	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
134	S3220	I-90	Lawrence Ave	Cook	J96	Cabinet	S-2
135	S3225	I-90	IL 50 (Cicero Ave)	Cook	J85	Cabinet	S-2
136	S3230	I-90	IL 50 (Cicero Ave)	Cook	J94	Cabinet	S-2
137	S3232	I-90/94	Montrose Ave	Cook	MCD 12	Cabinet	S-2
138	S3235	I-90/94	Montrose Ave	Cook	J81	Cabinet	S-2
139	S3238	I-90/94	Montrose Ave	Cook	J92A	Cabinet	S-2
140	S3250	I-90/94	Kostner Ave	Cook	K79	Cabinet	S-2
141	S3253	I-90/94	Keeler Ave	Cook	K77A	Cabinet	S-2
142	S3255	I-90/94	Keeler Ave	Cook	K90	Cabinet	S-2
143	S3260	I-90/94	Pulaski Rd	Cook	K73	Cabinet	S-2
144	S3290	I-90/94	Addison Rd	Cook	L67	Cabinet	S-2
145	S3295	I-90/94	Addison Rd	Cook	L69	Cabinet	S-2
146	S3300	I-90/94	Addison Rd	Cook	L78	Cabinet	S-2
147	S3315	I-90/94	Kimball Ave	Cook	L63	Cabinet	S-2
148	S3330	I-90/94	Kimball Ave	Cook	L74	Cabinet	S-2
149	S3335	I-90/94	Belmont Ave	Cook	L61	Cabinet	S-2
150	S3345	I-90/94	Sacramento Blvd	Cook	M55	Cabinet	S-2
151	S3375	I-90/94	California Ave	Cook	M64	Cabinet	S-2
152	S3380	I-90/94	Diversey Ave	Cook	M53	Cabinet	S-2
153	S3395	I-90/94	Fullerton Ave	Cook	N60	Cabinet	S-2
154	S3400	I-90/94	Fullerton Ave	Cook	N49	Cabinet	S-2
155	S3410	I-90/94	Webster Ave	Cook	N47	Cabinet	S-2
156	S3425	I-90/94	Armitage Ave	Cook	O45	Cabinet	S-2
157	S3430	I-90/94	Armitage Ave	Cook	O43	Cabinet	S-2
158	S3435	I-90/94	Armitage Ave	Cook	O52	Cabinet	S-2
159	S3440	I-90/94	North Ave	Cook	P41	Cabinet	S-2
160	S3455	I-90/94	North Ave	Cook	O50	Cabinet	S-2
161	S3462	I-90/94	Division St	Cook	R39A	Cabinet	S-2
162	S3470	I-90/94	Division St	Cook	R46	Cabinet	S-2
163	S3475	I-90/94	Augusta Blvd	Cook	R37	Cabinet	S-2
164	S3490	I-90/94	Chicago Ave	Cook	R40	Cabinet	S-2
165	S3495	I-90/94	Ohio St	Cook	S31	Cabinet	S-2
166	S3500	I-90/94	Ohio St	Cook	S33	Cabinet	S-2
167	S3505	I-90/94	Ohio St	Cook	S38	Cabinet	S-2
168	S3510	I-90/94	Ohio St Feeder	Cook	S32	Cabinet	S-2
169	S3515	I-90/94	Ohio St Feeder	Cook	S34	Cabinet	S-2
170	S3520	I-90/94	Green St	Cook	S36	Cabinet	S-2
171	S3530	I-90/94	Lake St	Cook	Y30	Cabinet	S-2
172	S3535	I-90/94	Randolph St	Cook	Y24	Cabinet	S-2
173	S3540	I-90/94	Randolph St	Cook	Y26	Cabinet	S-2
174	S3545	I-90/94	Randolph St	Cook	Y27	Cabinet	S-2
175	S3555	I-90/94	Washington Blvd	Cook	Y20	Cabinet	S-2
176	S3558	I-90/94	Washington Blvd	Cook	Y22S	Cabinet	S-2
177	S3560	I-90/94	Washington Blvd	Cook	Y22	Cabinet	S-2
178	S3565	I-90/94	Washington Blvd	Cook	Y23	Cabinet	S-2
179	S3575	I-90/94	Madison Ave	Cook	Y16	Cabinet	S-2
180	S3580	I-90/94	Madison Ave	Cook	Y18	Cabinet	S-2
181	S3585	I-90/94	Madison Ave	Cook	Y19	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
182	S3590	I-90/94	Madison Ave	Cook	Y21	Cabinet	S-2
183	S3595	I-90/94	Monroe St	Cook	Y15	Cabinet	S-2
184	S3605	I-90/94	Monroe St	Cook	Z10	Cabinet	S-2
185	S3610	I-90/94	Monroe St	Cook	Z12	Cabinet	S-2
186	S3615	I-90/94	Monroe St	Cook	Z14	Cabinet	S-2
187	S3620	I-90/94	Adams St	Cook	Z8	Cabinet	S-2
188	S3625	I-90/94	Adams St	Cook	Z9	Cabinet	S-2
189	S3630	I-90/94	Adams St	Cook	Z11	Cabinet	S-2
190	S3640	I-90/94	I-290 / Circle Interchange	Cook	Z1	Cabinet	S-2
191	S3645	I-90/94	I-290 / Circle Interchange	Cook	Z2	Cabinet	S-2
192	S3650	I-90/94	I-290 / Circle Interchange	Cook	Z3	Cabinet	S-2
193	S3655	I-90/94	I-290 / Circle Interchange	Cook	Z4	Cabinet	S-2
194	S3660	I-90/94	I-290 / Circle Interchange	Cook	Z5	Cabinet	S-2
195	S3665	I-90/94	I-290 / Circle Interchange	Cook	Z6	Cabinet	S-2
196	S3670	I-90/94	I-290 / Circle Interchange	Cook	Z7	Cabinet	S-2
197	S3675	I-90/94	I-290 / Circle Interchange	Cook	MCD 5	Cabinet	S-2
198	S4000	I-94	Wilson Ave	Cook	A2A	Cabinet	S-2
199	S4005	I-94	Wilson Ave	Cook	A1	Cabinet	S-2
200	S4010	I-94	Wilson Ave	Cook	2	Cabinet	S-2
201	S4015	I-94	Wilson Ave	Cook	3	Cabinet	S-2
202	S4016	I-94	Wilson Ave	Cook	MCD 10	Cabinet	S-2
203	S4018	I-94	Wilson Ave	Cook	MCD 11	Cabinet	S-2
204	S4030	I-94	IL 50 (Cicero Ave)	Cook	B6	Cabinet	S-2
205	S4035	I-94	Peterson Ave	Cook	C7	Cabinet	S-2
206	S4055	I-94	Devon Ave	Cook	D11	Cabinet	S-2
207	S4060	I-94	Pratt Ave	Cook	D13	Cabinet	S-2
208	S4085	I-94	Niles Center Rd	Cook	E19	Cabinet	S-2
209	S4090	I-94	Oakton St	Cook	G18	Cabinet	S-2
210	S4095	I-94	Lincoln Ave	Cook	G20	Cabinet	S-2
211	S4120	I-94	Church St	Cook	H26	Cabinet	S-2
212	S4125	I-94	Golf Rd	Cook	J25	Cabinet	S-2
213	S4130	I-94	Old Orchard	Cook	K27	Cabinet	S-2
214	S4135	I-94	Old Orchard	Cook	K28	Cabinet	S-2
215	S4140	I-94	Glenview Ave	Cook	K30	Cabinet	S-2
216	S4145	I-94	Lake Ave	Cook	L29	Cabinet	S-2
217	S4150	I-94	Lake Ave	Cook	L32	Cabinet	S-2
218	S4155	I-94	Lake Ave	Cook	L34	Cabinet	S-2
219	S4160	I-94	US 41 (Skokie Blvd)	Cook	M31	Cabinet	S-2
220	S4165	I-94	US 41 (Skokie Blvd)	Cook	M36	Cabinet	S-2
221	S4170	I-94	Winnetka Rd	Cook	M33	Cabinet	S-2
222	S4175	I-94	Willow Rd	Cook	N35	Cabinet	S-2
223	S4180	I-94	Willow Rd	Cook	N37	Cabinet	S-2
224	S4185	I-94	Willow Rd	Cook	N38	Cabinet	S-2
225	S4190	I-94	Willow Rd	Cook	N40	Cabinet	S-2
226	S4195	I-94	1/2 Mi S of Tower Rd	Cook	O42	Cabinet	S-2
227	S4200	I-94	Tower Rd	Cook	O39	Cabinet	S-2
228	S4205	I-94	Tower Rd	Cook	O44	Cabinet	S-2
229	S4210	I-94	1/2 Mi N of Tower Rd	Cook	P46	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
230	S4215	I-94	1/2 Mi S of IL 68 (Dundee Rd)	Cook	P48	Cabinet	S-2
231	S4220	I-94	IL 68 (Dundee Rd)	Cook	R41	Cabinet	S-2
232	S4225	I-94	IL 68 (Dundee Rd)	Cook	R50	Cabinet	S-2
233	S4230	I-94	IL 68 (Dundee Rd)	Cook	R52	Cabinet	S-2
234	S4235	I-94	I-294 Tollway	Cook	R54	Cabinet	S-2
235	S4240	I-94	Lake Cook Rd	Cook	S56	Cabinet	S-2
236	S5000	I-94	97th St	Cook	A1	Cabinet	S-2
237	S5005	I-94	97th St	Cook	M90	Cabinet	S-2
238	S5010	I-94	97th St	Cook	N89	Cabinet	S-2
239	S5020	I-94	US 12/20 (95th St)	Cook	O87	Cabinet	S-2
240	S5025	I-94	US 12/20 (95th St)	Cook	O88	Cabinet	S-2
241	S5030	I-94	87th St	Cook	O84	Cabinet	S-2
242	S5045	I-94	87th St	Cook	P83	Cabinet	S-2
243	S5060	I-94	83rd St	Cook	P81	Cabinet	S-2
244	S5065	I-94	79th St	Cook	P75	Cabinet	S-2
245	S5080	I-94	79th St	Cook	P79	Cabinet	S-2
246	S5090	I-94	76th St	Cook	P73	Cabinet	S-2
247	S5095	I-94	75th St	Cook	R69	Cabinet	S-2
248	S5100	I-94	75th St	Cook	R70	Cabinet	S-2
249	S5110	I-94	75th St	Cook	R74	Cabinet	S-2
250	S5122	I-94 NB	67 th St Exit	Cook	R50	Cabinet	S-2
251	S5130	I-94	67th St	Cook	R65	Cabinet	S-2
252	S5135	I-94	65th St Skyway Exit	Cook	S61	Cabinet	S-2
253	S5140	I-94	65th St Skyway Ent	Cook	S64	Cabinet	S-2
254	S5150	I-90/94	59th St	Cook	S59	Cabinet	S-2
255	S5155	I-90/94	59th St	Cook	S60	Cabinet	S-2
256	S5165	I-90/94	59th St	Cook	T51	Cabinet	S-2
257	S5170	I-90/94	59th St	Cook	T53	Cabinet	S-2
258	S5175	I-90/94	59th St	Cook	T55	Cabinet	S-2
259	S5180	I-90/94	59th St	Cook	T56	Cabinet	S-2
260	S5185	I-90/94	59th St	Cook	T58	Cabinet	S-2
261	S5190	I-90/94	55th St	Cook	T45	Cabinet	S-2
262	S5195	I-90/94	55th St	Cook	T47	Cabinet	S-2
263	S5200	I-90/94	55th St	Cook	T49	Cabinet	S-2
264	S5205	I-90/94	55th St	Cook	T50	Cabinet	S-2
265	S5210	I-90/94	55th St	Cook	T52	Cabinet	S-2
266	S5215	I-90/94	55th St	Cook	T54	Cabinet	S-2
267	S5220	I-90/94 SB	53 rd St	Cook		Cabinet	S-2
268	S5230	I-90/94 NB	47 th St Exit	Cook	40	Cabinet	S-2
269	S5240	I-90/94 SB	47 th St Exit	Cook		Cabinet	S-2
270	S5245	I-90/94	45th St	Cook	V35	Cabinet	S-2
271	S5260	I-90/94	45th St	Cook	V44	Cabinet	S-2
272	S5265	I-90/94	Root St	Cook	V31	Cabinet	S-2
273	S5270	I-90/94	Root St	Cook	V33	Cabinet	S-2
274	S5275	I-90/94	Root St	Cook	V36	Cabinet	S-2
275	S5280	I-90/94	Root St	Cook	V38	Cabinet	S-2
276	S5285	I-90/94	Root St	Cook	V40	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
277	S5295	I-90/94	39th St	Cook	W34	Cabinet	S-2
278	S5300	I-90/94	35th St	Cook	W27	Cabinet	S-2
279	S5305	I-90/94	35th St	Cook	W30	Cabinet	S-2
280	S5310	I-90/94	35th St	Cook	W32	Cabinet	S-2
281	S5315	I-90/94	33rd St	Cook	W25	Cabinet	S-2
282	S5320	I-90/94	33rd St	Cook	W28	Cabinet	S-2
283	S5325	I-90/94	31st St	Cook	W23	Cabinet	S-2
284	S5330	I-90/94	31st St	Cook	W26	Cabinet	S-2
285	S5335	I-90/94	29th St	Cook	X20	Cabinet	S-2
286	S5340	I-90/94	29th St	Cook	X21	Cabinet	S-2
287	S5345	I-90/94	29th St	Cook	X22	Cabinet	S-2
288	S5350	I-90/94	29th St	Cook	X24	Cabinet	S-2
289	S5355	I-90/94	26th St & Princeton Ave	Cook	X19	Cabinet	S-2
290	S5360	I-90/94	Ford Ave	Cook	Z12	Cabinet	S-2
291	S5365	I-90/94	Ford Ave	Cook	Z14	Cabinet	S-2
292	S5370	I-90/94	22nd St & Emerald Ave	Cook	Z10	Cabinet	S-2
293	S5375	I-90/94	22nd St & Emerald Ave	Cook	Z13	Cabinet	S-2
294	S5380	I-90/94	16th St & Union Ave	Cook	A11	Cabinet	S-2
295	S5393	I-90/94	Taylor St	Cook	C6T	Cabinet	S-2
296	S5395	I-90/94	Roosevelt Rd	Cook	C8	Cabinet	S-2
297	S5400	I-90/94	Taylor St	Cook	C3	Cabinet	S-2
298	S5410	I-90/94	Polk St	Cook	D1	Cabinet	S-2
299	S6045	I-94	US 6 (159th St)	Cook	F32	Cabinet	S-2
300	S6050	I-94	US 6 (159th St)	Cook	F34	Cabinet	S-2
301	S6055	I-94	US 6 (159th St)	Cook	F36	Cabinet	S-2
302	S6060	I-94	US 6 (159th St)	Cook	F47	Cabinet	S-2
303	S6065	I-94	US 6 (159th St)	Cook	F49	Cabinet	S-2
304	S6070	I-94	Penn Central RR	Cook	F45	Cabinet	S-2
305	S6075	I-94	Pulaski Rd	Cook	F43	Cabinet	S-2
306	S6080	I-94	IL 83 / 147th St / Sibley Blvd	Cook	G28	Cabinet	S-2
307	S6085	I-94	IL 83 / 147th St / Sibley Blvd	Cook	G30	Cabinet	S-2
308	S6090	I-94	IL 83 / 147th St / Sibley Blvd	Cook	G37	Cabinet	S-2
309	S6095	I-94	IL 83 / 147th St / Sibley Blvd	Cook	G39	Cabinet	S-2
310	S6100	I-94	IL 83 / 147th St / Sibley Blvd	Cook	G41	Cabinet	S-2
311	S6105	I-94	Dolton St	Cook	H24	Cabinet	S-2
312	S6110	I-94	Dolton St	Cook	H26	Cabinet	S-2
313	S6120	I-94	Dolton St	Cook	H35	Cabinet	S-2
314	S6125	I-94	N of B & O RR	Cook	H31	Cabinet	S-2
315	S6130	I-94	138th St	Cook	X22	Cabinet	S-2
316	S6135	I-94	138th St	Cook	X29	Cabinet	S-2
317	S6140	I-94	133rd St	Cook	X20	Cabinet	S-2
318	S6145	I-94	130th St	Cook	I16	Cabinet	S-2
319	S6150	I-94	130th St	Cook	I18	Cabinet	S-2
320	S6155	I-94	130th St	Cook	I25	Cabinet	S-2
321	S6160	I-94	130th St	Cook	I27	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
322	S6165	I-94	128th St	Cook	J23	Cabinet	S-2
323	S6170	I-94	124th St	Cook	J21	Cabinet	S-2
324	S6175	I-94	125th St	Cook	J19	Cabinet	S-2
325	S6180	I-94	115th St	Cook	H12	Cabinet	S-2
326	S6185	I-94	115th St	Cook	H14	Cabinet	S-2
327	S6190	I-94	115th St	Cook	H15	Cabinet	S-2
328	S6195	I-94	115th St	Cook	J17	Cabinet	S-2
329	S6200	I-94	111th St	Cook	K8	Cabinet	S-2
330	S6205	I-94	111th St	Cook	K10	Cabinet	S-2
331	S6210	I-94	111th St	Cook	K11	Cabinet	S-2
332	S6215	I-94	111th St	Cook	K13	Cabinet	S-2
333	S6220	I-94	107th St	Cook	L7	Cabinet	S-2
334	S6225	I-94	107th St	Cook	L9	Cabinet	S-2
335	S6230	I-94	103rd St	Cook	L6	Cabinet	S-2
336	S6235	I-94	Ellis Ave	Cook	L4	Cabinet	S-2
337	S6240	I-94	Ellis Ave	Cook	L5	Cabinet	S-2
338	S6245	I-94	Rhodes St	Cook	M3	Cabinet	S-2
339	S6250	I-94	Michigan Ave	Cook	M1	Cabinet	S-2
340	S6260	I-94	99th St & Lasalle	Cook	M91	Cabinet	S-2
341	S6265	I-94	99th St & Lasalle	Cook	M92	Cabinet	S-2
342	S7000	I-80/94	Indiana State Line	Cook	A2	Cabinet	S-2
343	S7005	I-80/94	Williams St	Cook	A1	Cabinet	S-2
344	S7010	I-80/94	Lorenz Ave	Cook	A4	Cabinet	S-2
345	S7015	I-80/94	School St	Cook	B3	Cabinet	S-2
346	S7020	I-80/94	Torrence Ave SS	Cook	B5	Cabinet	S-2
347	S7025	I-80-/94	Torrence Ave SS	Cook	B7	Cabinet	S-2
348	S7030	I-80/94	Torrence Ave NS	Cook	B6	Cabinet	S-2
349	S7035	I-80/94	Torrence Ave NS	Cook	B8	Cabinet	S-2
350	S7040	I-80/94	Paxton Ave	Cook	C10	Cabinet	S-2
351	S7045	I-80/94	Paxton Ave	Cook	MCD4	Cabinet	S-2
352	S8000	I-290	Franklin St	Cook	B2	Cabinet	S-2
353	S8010	I-290	Morgan St	Cook	G1	Cabinet	S-2
354	S8015	I-290	Racine Ave	Cook	G3	Cabinet	S-2
355	S8020	I-290	Racine Ave	Cook	G4	Cabinet	S-2
356	S8025	I-290	Racine Ave	Cook	G5	Cabinet	S-2
357	S8030	I-290	Racine Ave	Cook	G6	Cabinet	S-2
358	S8035	I-290	Ashland Ave	Cook	G7	Cabinet	S-2
359	S8045	I-290	Damen Ave & Paulina St	Cook	G9	Cabinet	S-2
360	S8050	I-290	Damen Ave & Paulina St	Cook	G10	Cabinet	S-2
361	S8055	I-290	Damen Ave & Paulina St	Cook	H11	Cabinet	S-2
362	S8065	I-290	Damen Ave & Paulina St	Cook	H12	Cabinet	S-2
363	S8070	I-290	Damen Ave & Paulina St	Cook	H12A	Cabinet	S-2
364	S8075	I-290	Oakley Ave	Cook	H13	Cabinet	S-2
365	S8080	I-290	Oakley Ave	Cook	H14	Cabinet	S-2
366	S8090	I-290	Western Ave	Cook	H17	Cabinet	S-2
367	S8100	I-290	Sacramento Blvd	Cook	I18	Cabinet	S-2
368	S8115	I-290	Homan Ave	Cook	I23	Cabinet	S-2
369	S8125	I-290	Independence Blvd	Cook	J24	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
370	S8130	I-290	Independence Blvd	Cook	J25	Cabinet	S-2
371	S8145	I-290	Kostner Ave	Cook	J29	Cabinet	S-2
372	S8150	I-290	IL 50 (Cicero Ave)	Cook	K28	Cabinet	S-2
373	S8155	I-290	IL 50 (Cicero Ave)	Cook	K31	Cabinet	S-2
374	S8170	I-290	Laramie Ave	Cook	K35	Cabinet	S-2
375	S8180	I-290	Central Ave	Cook	L34	Cabinet	S-2
376	S8185	I-290	Central Ave	Cook	L345	Cabinet	S-2
377	S8190	I-290	Central Ave	Cook	L37	Cabinet	S-2
378	S8200	I-290	Austin Blvd	Cook	L36	Cabinet	S-2
379	S8205	I-290	Austin Blvd	Cook	M41	Cabinet	S-2
380	S8215	I-290	East Ave	Cook	M38	Cabinet	S-2
381	S8220	I-290	East Ave	Cook	M45	Cabinet	S-2
382	S8225	I-290	East Ave	Cook	MCD 1	Cabinet	S-2
383	S8235	I-290	IL 43 (Harlem Ave)	Cook	M47	Cabinet	S-2
384	S8245	I-290	Des Plaines Ave	Cook	N42	Cabinet	S-2
385	S8250	I-290	Des Plaines Ave	Cook	N51	Cabinet	S-2
386	S8260	I-290	Des Plaines River	Cook	O44	Cabinet	S-2
387	S8270	I-290	IL 171 (1st Ave)	Cook	O55	Cabinet	S-2
388	S8275	I-290	IL 171 (1st Ave)	Cook	O57	Cabinet	S-2
389	S8290	I-290	9th Ave	Cook	P61	Cabinet	S-2
390	S8300	I-290	17th Ave	Cook	P56	Cabinet	S-2
391	S8305	I-290	17th Ave	Cook	P63	Cabinet	S-2
392	S8325	I-290	25th Ave	Cook	R67	Cabinet	S-2
393	S8335	I-290	Addison Creek	Cook	R62	Cabinet	S-2
394	S8380	I-290	Hillside Ave / Wolf Rd Exit	Cook	T77	Cabinet	S-2
395	S9000	I-290	Wolf Rd	Cook	V72	Cabinet	S-2
396	S9005	I-290	Wolf Rd	Cook	MCD 3	Cabinet	S-2
397	S9010	I-290	Butterfield Rd	Cook	V74	Cabinet	S-2
398	S9015	I-290	I-294 Tollway	Cook	V76	Cabinet	S-2
399	S9020	I-290	I-294 Tollway	Cook	V81	Cabinet	S-2
400	S9025	I-290	Maple Ave	Cook	W78	Cabinet	S-2
401	S9230	I-290 OB	N of Devon Ave	Cook	L123	Cabinet	S-2
402	S9235	I-290 IB	Biesterfield Rd	Cook	L122	Cabinet	S-2
403	S9240	I-290 OB	Biesterfield Rd	Cook	L123A	Cabinet	S-2
404	S9245	I-290 / IL 53 IB	N of Biesterfield Rd	Cook	M124	Cabinet	S-2
405	S9250	I-290 / IL 53 IB	WGN Radio Station Tower 1 1/2 Mi S of IL 72 (Higgins Rd)	Cook	M126	Cabinet	S-2
406	S9255	I-290 / IL 53 IB	1 Mi S of IL 72 (Higgins Rd)	Cook	M128	Cabinet	S-2
407	S9260	I-290 / IL 53 IB	1 Mi S of IL 72 (Higgins Rd)	Cook	N130	Cabinet	S-2
408	S9270	I-290 / IL 53 OB	IL 72 (Higgins Rd)	Cook	O127	Cabinet	S-2
409	S9275	I-290 / IL 53 IB	IL 72 (Higgins Rd)	Cook	O132	Cabinet	S-2
410	S9285	I-290 / IL 53 OB	Woodfield Dr	Cook	P129	Cabinet	S-2
411	S9295	I-290 / IL 53	I-90 Tollway	Cook	P131	Cabinet	S-2
412	S9300	I-290 / IL 53	I-90 Tollway	Cook	P138	Cabinet	S-2
413	S10000	IL 53	I-90 Tollway IB	Cook	133	Cabinet	S-2
414	S10003	IL 53	I-90 Tollway OB	Cook	140	Cabinet	S-2
415	S10005	IL 53	IL 62 (Algonquin Rd)	Cook	135	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
416	S10010	IL 53	IL 62 (Algonquin Rd)	Cook	142	Cabinet	S-2
417	S10015	IL 53	1/2 Mi N of Algonquin Rd	Cook	144	Cabinet	S-2
418	S10020	IL 53	Kirchoff Rd	Cook	146	Cabinet	S-2
419	S10025	IL 53	Kirchoff Rd	Cook	137	Cabinet	S-2
420	S10030	IL 53	Industrial Ave	Cook	143	Cabinet	S-2
421	S10035	IL 53	Euclid St	Cook	139	Cabinet	S-2
422	S10040	IL 53	Euclid St	Cook	148	Cabinet	S-2
423	S10045	IL 53	Euclid St	Cook	150	Cabinet	S-2
424	S10047	IL 53	Euclid St	Cook	141	Cabinet	S-2
425	S10050	IL 53	US 14 (Northwest Highway)	Cook	145	Cabinet	S-2
426	S10055	IL 53	US 14 (Northwest Highway)	Cook	152	Cabinet	S-2
427	S10060	IL 53	Palatine Rd	Cook	147	Cabinet	S-2
428	S10065	IL 53	Palatine Rd	Cook	149	Cabinet	S-2
429	S10070	IL 53	Palatine Rd	Cook	154	Cabinet	S-2
430	S10075	IL 53	Palatine Rd	Cook	156	Cabinet	S-2
431	S10080	IL 53	Anderson Dr	Cook	151	Cabinet	S-2
432	S10085	IL 53	US 12 (Rand Rd)	Cook	153	Cabinet	S-2
433	S10090	IL 53	US 12 (Rand Rd)	Cook	158	Cabinet	S-2
434	S10095	IL 53	IL 68 (Dundee Rd)	Cook	155	Cabinet	S-2
435	S10100	IL 53	IL 68 (Dundee Rd)	Cook	157	Cabinet	S-2
436	S10105	IL 53	IL 68 (Dundee Rd)	Cook	160	Cabinet	S-2
437	S10110	IL 53	IL 68 (Dundee Rd)	Cook	162	Cabinet	S-2
438	S10115	IL 53	1/2 Mi S of Lake Cook Rd	Cook	159	Cabinet	S-2
439	S12000	Lake Shore Dr	S of Marquette Rd	Cook	1	Cabinet	S-2
440	S12005	Lake Shore Dr	S of Marquette Rd	Cook	2	Cabinet	S-2
441	S12010	Lake Shore Dr	Hayes Dr	Cook	3	Cabinet	S-2
442	S12015	Lake Shore Dr	S of 59th St	Cook	4	Cabinet	S-2
443	S12020	Lake Shore Dr	S of 55th St	Cook	5	Cabinet	S-2
444	S12025	Lake Shore Dr	S of 53rd St	Cook	6	Cabinet	S-2
445	S12030	Lake Shore Dr	S of 48th St	Cook	7	Cabinet	S-2
446	S12035	Lake Shore Dr	S of 47th St	Cook	8	Cabinet	S-2
447	S10240	Lake Shore Dr	S of 47th St	Cook	9	Cabinet	S-2
448	S12045	Lake Shore Dr	S of 43rd St	Cook	10	Cabinet	S-2
449	S12050	Lake Shore Dr	S of Oakwood Blvd	Cook	11	Cabinet	S-2
450	S12055	Lake Shore Dr	S of Oakwood Blvd	Cook	12	Cabinet	S-2
451	S12060	Lake Shore Dr	N of Oakwood Blvd	Cook	13	Cabinet	S-2
452	S12065	Lake Shore Dr	S of 35th St	Cook	14	Cabinet	S-2
453	S12070	Lake Shore Dr	S of 31st St	Cook	15	Cabinet	S-2
454	S12075	Lake Shore Dr	N of 31st St	Cook	16	Cabinet	S-2
455	S12080	Lake Shore Dr	S of 31st St	Cook	17	Cabinet	S-2
456	S12085	Lake Shore Dr	N of 31st St	Cook	18	Cabinet	S-2
457	S12090	Lake Shore Dr	25th St	Cook	19	Cabinet	S-2
458	S12095	Lake Shore Dr	23rd St	Cook	20	Cabinet	S-2
459	S12100	Lake Shore Dr	N of 23rd St	Cook	21	Cabinet	S-2
460	S12105	Lake Shore Dr	N of 23rd St	Cook	MCD 7	Cabinet	S-2
461	S12106	Lake Shore Dr	18th St	Cook	22	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
462	S12107	Lake Shore Dr OB	18th St	Cook	21A	Cabinet	S-2
463	S12110	Lake Shore Dr	S of McFetridge Dr	Cook	23	Cabinet	S-2
464	S12115	Lake Shore Dr	S of Balbo Ave	Cook	24	Cabinet	S-2
465	S12120	Lake Shore Dr	Jackson Blvd	Cook	25	Cabinet	S-2
466	S13025	Lake Shore Dr	Randolph St	Cook	26	Cabinet	S-2
467	S13030	Lake Shore Dr	Randolph St	Cook	27	Cabinet	S-2
468	S13035	Lake Shore Dr	Randolph St	Cook	28	Cabinet	S-2
469	S13040	Lake Shore Dr	Randolph St	Cook	29	Cabinet	S-2
470	S13045	Lake Shore Dr	Wacker Dr	Cook	30	Cabinet	S-2
471	S13050	Lake Shore Dr	Illinois St	Cook	31	Cabinet	S-2
472	S13055	Lake Shore Dr	Grand Ave	Cook	32	Cabinet	S-2
473	S13060	Lake Shore Dr	Wacker Dr	Cook	33	Cabinet	S-2
474	S13065	Lake Shore Dr	Erie St	Cook	34	Cabinet	S-2
475	S13070	Lake Shore Dr	S of Chicago Ave	Cook	35	Cabinet	S-2
476	S13075	Lake Shore Dr	Chicago Ave	Cook	36	Cabinet	S-2
477	S13080	Lake Shore Dr	Chicago Ave	Cook	37	Cabinet	S-2
478	S13085	Lake Shore Dr	Chestnut St	Cook	38	Cabinet	S-2
479	S13090	Lake Shore Dr	Chestnut St	Cook	39	Cabinet	S-2
480	S13095	Lake Shore Dr	Michigan Ave	Cook	40	Cabinet	S-2
481	S13100	Lake Shore Dr	Michigan Ave	Cook	41	Cabinet	S-2
482	S13105	Lake Shore Dr	Michigan Ave	Cook	42	Cabinet	S-2
483	S13110	Lake Shore Dr	Division St	Cook	43	Cabinet	S-2
484	S13115	Lake Shore Dr	Division St	Cook	44	Cabinet	S-2
485	S13120	Lake Shore Dr	Division St	Cook	45	Cabinet	S-2
486	S13125	Lake Shore Dr	North Ave	Cook	46	Cabinet	S-2
487	S13130	Lake Shore Dr	North Ave	Cook	47	Cabinet	S-2
488	S13135	Lake Shore Dr	North Ave	Cook	48	Cabinet	S-2
489	S13140	Lake Shore Dr	North Ave	Cook	49	Cabinet	S-2
490	S13145	Lake Shore Dr	North Ave	Cook	50	Cabinet	S-2
491	S13150	Lake Shore Dr	Armitage Ave	Cook	51	Cabinet	S-2
492	S13155	Lake Shore Dr	Fullerton Parkway	Cook	52	Cabinet	S-2
493	S13160	Lake Shore Dr	Fullerton Parkway	Cook	53	Cabinet	S-2
494	S13165	Lake Shore Dr	Fullerton Parkway	Cook	54	Cabinet	S-2
495	S13170	Lake Shore Dr	Diversey Ave	Cook	55	Cabinet	S-2
496	S13175	Lake Shore Dr	Diversey Ave	Cook	56	Cabinet	S-2
497	S13180	Lake Shore Dr	Belmont Ave	Cook	57	Cabinet	S-2
498	S13185	Lake Shore Dr	Belmont Ave	Cook	58	Cabinet	S-2
499	S13190	Lake Shore Dr	Belmont Ave	Cook	59	Cabinet	S-2
500	S13195	Lake Shore Dr	Belmont Ave	Cook	60	Cabinet	S-2
501	S13200	Lake Shore Dr	Belmont Ave	Cook	61	Cabinet	S-2
502	S13205	Lake Shore Dr	Addison St	Cook	62	Cabinet	S-2
503	S13210	Lake Shore Dr	Addison St	Cook	63	Cabinet	S-2
504	S13215	Lake Shore Dr	IL 19 (Irving Park Rd)	Cook	64	Cabinet	S-2
505	S13220	Lake Shore Dr	IL 19 (Irving Park Rd)	Cook	65	Cabinet	S-2
506	S13225	Lake Shore Dr	IL 19 (Irving Park Rd)	Cook	66	Cabinet	S-2
507	S13230	Lake Shore Dr	IL 19 (Irving Park Rd)	Cook	67	Cabinet	S-2
508	S13235	Lake Shore Dr	Montrose Ave	Cook	68	Cabinet	S-2
509	S13240	Lake Shore Dr	Montrose Ave	Cook	69	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
510	S13245	Lake Shore Dr	Wilson Ave	Cook	70	Cabinet	S-2
511	S13250	Lake Shore Dr	Wilson Ave	Cook	71	Cabinet	S-2
512	S13255	Lake Shore Dr	Wilson Ave	Cook	72	Cabinet	S-2
513	S13260	Lake Shore Dr	Lawrence Ave	Cook	73	Cabinet	S-2
514	S13265	Lake Shore Dr	Lawrence Ave	Cook	74	Cabinet	S-2
515	S13270	Lake Shore Dr	Lawrence Ave	Cook	75	Cabinet	S-2
516	S13275	Lake Shore Dr	Foster Ave	Cook	76	Cabinet	S-2
517	S13280	Lake Shore Dr	Foster Ave	Cook	77	Cabinet	S-2
518	S13285	Lake Shore Dr	Foster Ave	Cook	78	Cabinet	S-2
519	S13290	Lake Shore Dr	Bryn Mawr Ave	Cook	79	Cabinet	S-2
520	S13295	Lake Shore Dr	Bryn Mawr Ave	Cook	80	Cabinet	S-2
521	S13297	Lake Shore Dr	Bryn Mawr Ave	Cook	81	Cabinet	S-2
522	S14015	Elgin O'Hare	Meacham Rd	Cook	5	Cabinet	S-2
523	S14020	Elgin O'Hare	Plum Grove Rd	Cook	7	Cabinet	S-2
524	S14025	Elgin O'Hare	1/2 Mi E of Roselle Rd	Cook	4	Cabinet	S-2
525	S14030	Elgin O'Hare	E of Roselle Rd	Cook	6	Cabinet	S-2
526	S14035	Elgin O'Hare	W of Roselle Rd	Cook	9	Cabinet	S-2
527	S14040	Elgin O'Hare	E of Mitchell Blvd	Cook	11	Cabinet	S-2
528	S14045	Elgin O'Hare	E of Wright Blvd	Cook	13	Cabinet	S-2
529	S14050	Elgin O'Hare	E of Wright Blvd	Cook	8	Cabinet	S-2
530	S14055	Elgin O'Hare	W of Wright Blvd	Cook	15	Cabinet	S-2
531	S14060	Elgin O'Hare	IL 19 (Irving Park Rd)	Cook	10	Cabinet	S-2
532	S14065	Elgin O'Hare	IL 19 (Irving Park Rd)	Cook	17	Cabinet	S-2
533	S14070	Elgin O'Hare	Gary Ave	Cook	19	Cabinet	S-2
534	S14075	Elgin O'Hare	Springingsguth Rd	Cook	21	Cabinet	S-2
535	S14080	Elgin O'Hare	W of Springingsguth Rd	Cook	12	Cabinet	S-2
536	S15000	I-80	I-294 Tollway	Cook	2	Cabinet	S-2
537	S15005	I-80	Kedzie Ave	Cook	4E	Cabinet	S-2
538	S15010	I-80	1/2 Mi W of Kedzie Ave	Cook	1	Cabinet	S-2
539	S15015	I-80	Crawford Ave	Cook	6E	Cabinet	S-2
540	S15020	I-80	1/2 Mi E of IL 50 (Cicero Ave)	Cook	8E	Cabinet	S-2
541	S15025	I-80	IL 50 (Cicero Ave)	Cook	10	Cabinet	S-2
542	S15030	I-80	E of I-57	Cook	3	Cabinet	S-2
543	S15035	I-80	W of I-57	Cook	5	Cabinet	S-2
544	S15040	I-80	Central Ave	Cook	7	Cabinet	S-2
545	S15045	I-80	183rd St	Cook	12	Cabinet	S-2
546	S15050	I-80	Ridgeland Ave	Cook	14	Cabinet	S-2
547	S15055	I-80	Oak Park Ave	Cook	9	Cabinet	S-2
548	S15060	I-80	E of IL 43 (Harlem Ave)	Cook	16	Cabinet	S-2
549	S15067	I-80	IL 43 (Harlem Ave)	Cook	MCD 13	Cabinet	S-2
550	S20005	IL 59 (Sutton Rd)	US 20 (Lake St)	Cook	1050	Cabinet	S-2
551	S20010	I-90/94	51st St	Cook	1121	Cabinet	S-2
552	S20015	I-90/94	51st St	Cook	1123	Cabinet	S-2
553	S20020	US 6 (159th St)	Pulaski Rd / Crawford Ave	Cook	1170	Cabinet	S-2
554	S20070	IL 43 (Harlem Ave)	Techny Rd	Cook	1280	Cabinet	S-2
555	S20075	IL 68 (Dundee Rd)	Portwine Rd	Cook	1290	Cabinet	S-2
556	S20085	IL 58 (Golf Rd)	Birch Ave	Cook	1260	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
557	S20090	IL 50 (Cicero Ave)	S of 99th St	Cook	1200	Cabinet	S-2
558	S20110	IL 7 (SW Highway)	131st St	Cook	1190	Cabinet	S-2
559	S20115	US 14 (Northwest Highway)	W of Chatham Pl	Cook	1270	Cabinet	S-2
560	S20120	Devon Ave	E of Arlington Heights Rd	Cook	1230	Cabinet	S-2
561	S20160	Kedzie Ave	S of Touhy Ave	Cook	1250	Cabinet	S-2
562	S20165	IL 72 (Higgins Rd)	E of I-294 Tollway	Cook	1240	Cabinet	S-2
563	S20205	IL 83 (147th St / Sibley Blvd)	W of Minerva Ave	Cook	1180	Cabinet	S-2
564	S20210	Cossitt Ave	E of Sunset Ave	Cook	1210	Cabinet	S-2
565	S20215	US 12/45 (Mannheim Rd)	Roadway Shipping Terminal Ent.	Cook	1220	Cabinet	S-2
566	S22000	I-90	Nagle Ave	Cook	1110	Cabinet	S-2
567	S22005	I-290	W of US 12/20/45 (Mannheim Rd)	Cook	1113	Cabinet	S-2
568	S22025	I-80	3/4 Mi W of Kedzie Ave	Cook	1177	Cabinet	S-2
569	S22030	I-57	IL 83 (147th St / Sibley Blvd)	Cook	1178	Cabinet	S-2
570	S1330	I-55	W of County Line Rd	DuPage	59	Cabinet	S-2
571	S1335	I-55	1 Mi W of County Line	DuPage	61	Cabinet	S-2
572	S1340	I-55	Madison St	DuPage	63	Cabinet	S-2
573	S1345	I-55	E of IL 83	DuPage	58	Cabinet	S-2
574	S1350	I-55	W of IL 83	DuPage	60	Cabinet	S-2
575	S1355	I-55	Clarendon Hills Rd	DuPage	65	Cabinet	S-2
576	S1360	I-55	1/2 Mi W of Clarendon Hills Rd	DuPage	62	Cabinet	S-2
577	S1365	I-55	E of Cass Ave	DuPage	64	Cabinet	S-2
578	S1370	I-55	W of Cass Ave	DuPage	66	Cabinet	S-2
579	S1375	I-55	1 Mi W of Cass Ave	DuPage	68	Cabinet	S-2
580	S1380	I-55	1/2 Mi E of Lemont Rd	DuPage	67	Cabinet	S-2
581	S1385	I-55	E of Lemont Rd	DuPage	70	Cabinet	S-2
582	S1390	I-55	W of Lemont Rd	DuPage	72	Cabinet	S-2
583	S1395	I-55	1/2 Mi W of Lemont Rd	DuPage	74	Cabinet	S-2
584	S9050	I-290	CN RR / C & NW RR	DuPage	X84	Cabinet	S-2
585	S9060	I-290	IL 64 (North Ave)	DuPage	X87	Cabinet	S-2
586	S9065	I-290	IL 64 (North Ave)	DuPage	X88	Cabinet	S-2
587	S9070	I-290	IL 64 (North Ave)	DuPage	X89	Cabinet	S-2
588	S9080	I-290	IL 64 (North Ave)	DuPage	X91	Cabinet	S-2
589	S9085	I-290	Emroy Ave	DuPage	X92	Cabinet	S-2
590	S9090	I-290	York Rd & Lake St	DuPage	Y93	Cabinet	S-2
591	S9095	I-290	York Rd & Lake St	DuPage	Y94	Cabinet	S-2
592	S9100	I-290	York Rd & Lake St	DuPage	Y95	Cabinet	S-2
593	S9105	I-290	York Rd & Lake St	DuPage	Y96	Cabinet	S-2
594	S9110	I-290	York Rd & Lake St	DuPage	Y97	Cabinet	S-2
595	S9115	I-290	Church Rd	DuPage	Y99	Cabinet	S-2
596	S9120	I-290	Grand Ave	DuPage	Y98	Cabinet	S-2
597	S9125	I-290	IL 83 (Kingery Highway)	DuPage	A100	Cabinet	S-2
598	S9135	I-290	IL 83 (Kingery Highway)	DuPage	A102	Cabinet	S-2
599	S9145	I-290	Wooddale Rd	DuPage	B105	Cabinet	S-2
600	S9150	I-290	W of Wooddale Rd	DuPage	E107	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
601	S9155	I-290	Addison Rd	DuPage	E109	Cabinet	S-2
602	S9160	I-290	W of Addison Rd	DuPage	E104	Cabinet	S-2
603	S9165	I-290	Mill Rd	DuPage	F111	Cabinet	S-2
604	S9170	I-290	Itasca Rd	DuPage	G106	Cabinet	S-2
605	S9175	I-290	Nordic Rd	DuPage	G110	Cabinet	S-2
606	S9180	I-290	Nordic Rd	DuPage	J112	Cabinet	S-2
607	S9185	I-290	Nordic Rd	DuPage	MCD 2	Cabinet	S-2
608	S9190	I-290	N of IL 19 (Irving Park Rd)	DuPage	J114	Cabinet	S-2
609	S9195	I-290	1/2 Mi S of Thorndale Ave	DuPage	J113	Cabinet	S-2
610	S9200	I-290 IB	S of Thorndale Ave	DuPage	J116	Cabinet	S-2
611	S9205	I-290 OB	S of Thorndale Ave	DuPage	J117	Cabinet	S-2
612	S9210	I-290 IB	Thorndale Ave NE	DuPage	L119	Cabinet	S-2
613	S9215	I-290 IB	Thorndale Ave NW	DuPage	K118	Cabinet	S-2
614	S9225	I-290 OB	Devon Ave	DuPage	L121	Cabinet	S-2
615	S11000	I-290/I-355	Schick Rd	DuPage	G108	Cabinet	S-2
616	S11005	I-290/I-355	US 20 (Lake St)	DuPage	I1	Cabinet	S-2
617	S11010	I-290/I-355	US 20 (Lake St)	DuPage	I2	Cabinet	S-2
618	S11015	I-290/I-355	US 20 (Lake St)	DuPage	I4	Cabinet	S-2
619	S11020	I-290/I-355	Kings Point Dr	DuPage	I6	Cabinet	S-2
620	S14000	Elgin O'Hare	IL 53 (Rohlwing Rd)	DuPage	1	Cabinet	S-2
621	S14005	Elgin O'Hare	1/2 Mi W of IL 53 (Rohlwing Rd)	DuPage	2	Cabinet	S-2
622	S14010	Elgin O'Hare	E of Meacham Rd	DuPage	3	Cabinet	S-2
623	S14085	Elgin O'Hare	Metra RR Bridge	DuPage	14	Cabinet	S-2
624	S14090	Elgin O'Hare	US 20 (Lake St)	DuPage	16	Cabinet	S-2
625	S20025	IL 53	75th St	DuPage	1310	Cabinet	S-2
626	S20030	IL 64 (North Ave)	IL 59 (Sutton Rd)	DuPage	1320	Cabinet	S-2
627	S20060	IL 38 (Roosevelt Rd)	W of Finley Rd	DuPage	1330	Cabinet	S-2
628	S20095	IL 83 (Kingery Highway)	N of 55th St	DuPage	1340	Cabinet	S-2
629	S20125	Wooddale Ave	S of Mark St	DuPage	1350	Cabinet	S-2
630	S20220	IL 59	S of 75th St	DuPage	1995	Cabinet	S-2
631	S22015	I-290	IL 83 (Kingery Highway)	DuPage	1175	Cabinet	S-2
632	S22020	I-55	Cass Ave	DuPage	1176	Cabinet	S-2
633	S20035	IL 31 (Lincoln Way)	IL 56 (State St)	Kane	1420	Cabinet	S-2
634	S20080	Peplow Rd	N of Ramm Rd	Kane	1430	Cabinet	S-2
635	S20130	Galligan Rd	S of Freeman Rd	Kane	1440	Cabinet	S-2
636	S20155	Campton Hills Rd	E of Lynn Dr	Kane	1450	Cabinet	S-2
637	S4245	US 41 (Skokie Highway)	Lake Cook Rd	Lake	S58	Cabinet	S-2
638	S4250	US 41 (Skokie Highway)	1/2 Mi N of Lake Cook Rd	Lake	T60	Cabinet	S-2
639	S4255	US 41 (Skokie Highway)	Bob O Link Golf Club	Lake	T45	Cabinet	S-2
640	S4260	US 41 (Skokie Highway)	Chantilly Blvd	Lake	T62	Cabinet	S-2
641	S4265	US 41 (Skokie Highway)	Clavey Rd	Lake	T43	Cabinet	S-2
642	S20000	US 12 / IL 59	IL134(Long Hollow Rd)	Lake	1040	Cabinet	S-2
643	S20040	US 45	IL 176	Lake	1500	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
644	S20045	IL 22 (Half Day Rd)	IL 83	Lake	1520	Cabinet	S-2
645	S20065	IL 131 (Green Bay Rd)	S of 20th St	Lake	1530	Cabinet	S-2
646	S20100	IL 59	S of Hillcrest Dr	Lake	1540	Cabinet	S-2
647	S20135	Wilson Ave	N of Marshall Blvd	Lake	1550	Cabinet	S-2
648	S20140	IL 176 (Park Ave)	E of Blue Spruce Ln	Lake	1560	Cabinet	S-2
649	S20170	Lake St	W of West St	Lake	1570	Cabinet	S-2
700	S20050	IL 31	US 14 (Northwest Highway)	McHenry	1610	Cabinet	S-2
701	S20150	US 14	SE of Deep Cut Rd	McHenry	1620	Cabinet	S-2
702	S1435	I-55	W of Upton Rd	Will	82	Cabinet	S-2
703	S1440	I-55	2/3 Mi E of IL 53	Will	73	Cabinet	S-2
704	S1445	I-55	E of IL 53	Will	84	Cabinet	S-2
705	S1450	I-55	W of IL 53	Will	86	Cabinet	S-2
706	S1455	I-55	E of Schmidt Rd	Will	88	Cabinet	S-2
707	S1460	I-55	W of Schmidt Rd	Will	75	Cabinet	S-2
708	S1465	I-55	1/2 Mi E of Naperville Rd	Will	90	Cabinet	S-2
709	S1470	I-55	W of Naperville Rd	Will	92	Cabinet	S-2
710	S15065	I-80	W of IL 43 (Harlem Ave)	Will	18	Cabinet	S-2
711	S15070	I-80	76th St	Will	11	Cabinet	S-2
712	S15075	I-80	80th Ave	Will	20	Cabinet	S-2
713	S15080	I-80	187th St	Will	13	Cabinet	S-2
714	S15085	I-80	E of Metra RR Bridge	Will	15	Cabinet	S-2
715	S15090	I-80	W of Metra RR Bridge	Will	17	Cabinet	S-2
716	S15095	I-80	E of US 45 (LaGrange Rd)	Will	22	Cabinet	S-2
717	S15100	I-80	W of US 45 (LaGrange Rd)	Will	24	Cabinet	S-2
718	S20055	US 45 (LaGrange Rd)	US 30 (Lincoln Highway)	Will	1730	Cabinet	S-2
719	S20105	Independence Blvd	N of Taylor St	Will	1740	Cabinet	S-2
720	S20145	IL 126 (Plainfield Rd)	N of 143rd St	Will	1750	Cabinet	S-2
721	S20175	7th St	W of Peppermill Rd	Will	1760	Cabinet	S-2
722	S20180	Manhattan Rd	1 Mi N of Elwood	Will	1770	Cabinet	S-2
723	S20185	I-57	E of Kennedy Rd	Will	1780	Cabinet	S-2
724	S20190	Peotone Beecher Rd	W of Kedzie Ave	Will	1790	Cabinet	S-2
725	S20195	I-80	N of Shepley Rd / Holt Rd	Will	1850	Cabinet	S-2
726	S20200	I-55	S of IL 113	Will	1860	Cabinet	S-2
727	S22040	US 52 (Joliet Rd)	US 45 (LaGrange Rd)	Will	5182	Cabinet	S-2
728	S23100	I-55	IL 129	Will		Cabinet	S-2
729	S23200	I-57	N of US 30	Will		Cabinet	S-2
730	S23300	I-57	Peotone Wilmington exit	Will		Cabinet	S-2
731	S23400	I-80 Median	I-355 WB exit	Will		Cabinet	S-2
732	S23500	I-80	Larkin Ave Exit	Will		Cabinet	S-2
733	S23600	I-80	I-55	Will		Cabinet	S-2
734	S23700	I-55	Bet, Renwick & US0	Will		Cabinet	S-2

1	S1007	I-55 OB	Martin Luther King Dr	Cook	DMS-7	Sign	S-3
2	S1112	I-55 IB	W of Kedzie Ave	Cook	DMS-5	Sign	S-3
3	S1262	I-55 IB	W of 1st Ave	Cook	DMS-23	Sign	S-3
4	S2052	I-57 IB	119th St	Cook	DMS-29	Sign	S-3

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
5	S2265	I-57 IB	S of I-80 (183rd St)	Cook	DMS-28	Sign	S-3
6	S3096	I-90 IB	Canfield Ave	Cook	DMS-19	Sign	S-3
7	S3176	I-90 IB	Foster Ave	Cook	DMS-18	Sign	S-3
8	S3281	I-90/94 IB	Pulaski Rd	Cook	DMS-17	Sign	S-3
9	S3331	I-90/94 Reversible IB	Kimball Ave	Cook	DMS-16	Sign	S-3
10	S3416	I-90/94 Reversible IB	Webster Ave	Cook	DMS-14	Sign	S-3
11	S3417	I-90/94 OB	Damen Ave	Cook	DMS-15	Sign	S-3
12	S3482	I-90/94 IB	Augusta Blvd	Cook	DMS-13	Sign	S-3
13	S4086	I-94 IB	Niles Center Rd	Cook	DMS-21	Sign	S-3
14	S4206	I-94 IB	Tower Rd	Cook	DMS-22	Sign	S-3
15	S5377	I-90/94 IB	S Branch of Chicago River	Cook	DMS-8	Sign	S-3
16	S5406	I-90/94 OB	Taylor St	Cook	DMS-9	Sign	S-3
17	S5407	I-90/94 Median IB	Taylor St	Cook	DMS-10	Sign	S-3
18	S6103	I-94 IB	145 th St	Cook	DMS-26	Sign	S-3
19	S6104	I-94 OB	145 th St	Cook	DMS-25	Sign	S-3
20	S7001	I-80 IB	State Line	Cook	DMS-1	Sign	S-3
21	S8002	I-290 IB	E of Old Post Office	Cook	DMS-12	Sign	S-3
22	S8072	I-290 IB	Damen Ave	Cook	DMS-11	Sign	S-3
23	S10029	IL 53 IB	Industrial Ave	Cook	DMS-36	Sign	S-3
24	S16015	IL 394 NB	186 th St	Cook	DMS-27	Sign	S-3
25	S1332	I-55 IB	W of County Line Rd	DuPage	DMS-24	Sign	S-3
26	S9252	I-290 IB	N of Biesterfield Rd	DuPage	DMS-35	Sign	S-3
27	S1585	I-55 IB	Caton Farm Rd	Will	DMS-33	Sign	S-3
28	S1660	I-55 IB	US 6	Will	DMS-34	Sign	S-3

1	S1282	US 12/20/45 (LaGrange Rd) NB IB	S of I-55	Cook	DMS-104	Sign	S-4
2	S1283	US 12/20/45 (LaGrange Rd) SB OB	N of I-55	Cook	DMS-105	Sign	S-4
3	S4072	Touhy Ave WB OB	E of I-94	Cook	DMS-106	Sign	S-4
4	S4073	Touhy Ave EB IB	W of I-94	Cook	DMS-107	Sign	S-4
5	S22050	Grand Ave EB IB	77th Ave	Cook	DMS-101	Sign	S-4
6	S22150	Stoney Island Ave SB OB	98 th Pl	Cook	DMS-108	Sign	S-4
7	S22200	US 6 (159 th St) EB IB	W of Crawford Ave	Cook	DMS-109	Sign	S-4
8	S22250	US 6 (159 th St) WB OB	W of Dixie Hwy	Cook	DMS-110	Sign	S-4
9	S22350	US 45 (Mannheim Rd) NB IB	S of I-290	Cook	DMS-113	Sign	S-4
10	S22400	US 45 (Mannheim Rd) SB OB	N of I-290	Cook	DMS-114	Sign	S-4
11	S22450	US 45 (Mannheim Rd) SB IB	N of I-190	Cook	DMS-115	Sign	S-4
12	S9132	IL 83 (Kingery Highway) NB OB	S of US 20	DuPage	DMS-102	Sign	S-4
13	S9133	IL 83 (Kingery Highway) SB IB	N of I-290	DuPage	DMS-103	Sign	S-4
14	S22100	US 41 (Skokie Hwy) OB	S of West Park Ave	Lake	DMS-111	Sign	S-4

Ct	Loc #	Main Route	Nearest Cross Street	Co	Cab/Sign #	Type of Equipment	Pay Item
15	S22300	US 41 (Skokie Hwy) OB	S of IL 22 (Half Day Rd)	Lake	DMS-112	Sign	S-4

TRAFFIC SIGNALS

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1		TS5	IL 43 (Harlem Ave)	I-55 N Ramp	Cook	T-1A
2		TS10	I-55	Central Ave	Cook	T-1A
3		TS15	IL 43 (Harlem Ave)	I-55 S Ramp	Cook	T-1A
4		TS20	I 57 West Leg Ryan	119 th @ Ashland	Cook	T-1A
5		TS22	Kedzie Ave	131st St	Cook	T-1A
6	09	TS25	127th St / I-57 E Ramps	Marshfield Ave	Cook	T-1A
7		TS30	IL 83 Sibley Blvd	I 57 West Ramp	Cook	T-1A
8		TS31	IL 83 Sibley Blvd	I 57 East Ramp	Cook	T-1A
9	09	TS35	127th St / I-57 W Ramps	Paulina St	Cook	T-1A
10	03	TS45	Dixie Highway	I-80 Tollway	Cook	T-1A
11	03	TS48	171st St	Dixie Highway	Cook	T-1A
12	09	TS50	I-80	Kedzie Ave N Ramp	Cook	T-1A
13		TS60	IL 43 (Waukegan Rd)	I-94 Edens Tlwy Spur North	Cook	T-1A
14		TS61	IL 43 (Waukegan Rd)	I 94 Edens Tlwy Spur South	Cook	T-1A
15	10	TS65	I-94 / Estes Ave	IL 50 (Cicero Ave)	Cook	T-1A
16		TS75	I-290 S Frontage Rd / Harrison	US 12/20/45 (Mannheim Rd)	Cook	T-1A
17		TS77	I-290 EB Exit Ramp F	US 12/20/45 (Mannheim Rd)	Cook	T-1A
18		TS80	I-290 WB Exit Ramps B & G	US 12/20/45 (Mannheim Rd)	Cook	T-1A
19		TS85	I-290	IL 43 (Harlem Ave)	Cook	T-1A
20		TS90	I 290 IL 53 E Frontage Rd	IL 58 Golf Rd	Cook	T-1A
21		TS91	I 290 IL 53 W Frontage Rd	IL 58 Golf Rd	Cook	T-1A
22		TS95	I-290 IL 53 W Frontage Rd	IL 72 (Higgins Rd)	Cook	T-1A
23		TS96	I-290 IL 53 E Frontage Rd	IL 72 (Higgins Rd)	Cook	T-1A
24		TS100	IL 171 1st Ave	I 290 IKE Harrison Bataan	Cook	T-1A
25	09	TS105	I-290 / Harrison St	17th Ave	Cook	T-1A
26		TS110	I-290	Austin Blvd	Cook	T-1A
27		TS115	I-290 / Harrison St	Des Plaines Ave	Cook	T-1A
28	02	TS125	IL 50 (Cicero Ave)	128th St	Cook	T-1A
29	05	TS130	22nd St / Cermak Rd	I-294 Tollway E Ramps	Cook	T-1A
30	05	TS135	22nd St / Cermak Rd	I-294 Tollway W Ramps	Cook	T-1A
31		TS140	Willow Rd	I-294 Tollway E Ramps	Cook	T-1A
32		TS145	Willow Rd	I-294 Tollway W Ramps	Cook	T-1A
33	01	TS150	US 6 159th St	US 45 (LaGrange Rd)	Cook	T-1A
34		TS155	US 6 159th St	IL 1 Halsted St	Cook	T-1A
35		TS156	179th St	Wolf Rd	Cook	T-1A
36		TS158	IL 7 (Wolf Rd)	151st St	Cook	T-1A
37		TS159	IL 7 (Wolf Rd)	153rd St	Cook	T-1A
38	04	TS160	US 6 (159th St)	IL 7 (Wolf Rd) North Junction	Cook	T-1A
39	04	TS161	US 6 (Wolf Rd)	US 6 (173rd St) South Junction	Cook	T-1A
40	03	TS162	US 6 (Wolf Rd)	Brookhill Dr	Cook	T-1A
41	06	TS163	IL 7 (159th St)	Will Cook Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
42	01	TS165	US 6 (159th St)	IL 43 (Harlem Ave)	Cook	T-1A
43	04	TS170	US 6 (159th St)	IL 50 (Cicero Ave)	Cook	T-1A
44	04/09	TS175	US 6 (159th St)	IL 83 (Torrence Ave)	Cook	T-1A
45	01	TS180	US 6 (159th St)	76th Ave	Cook	T-1A
46	01	TS185	US 6 (159th St)	80th Ave	Cook	T-1A
47	02	TS190	US 6 (159th St)	94th St	Cook	T-1A
48		TS195	US 6 IL 83 Torrence Ave	170 th St	Cook	T-1A
49		TS200	US 6 159 th St	162 nd @ Carse St	Cook	T-1A
50	01	TS205	US 6 (159th St)	Central Ave	Cook	T-1A
51	02	TS210	US 6 (159th St)	Cottage Grove Ave	Cook	T-1A
52	04	TS215	US 6 (159th St)	Crawford Ave / Pukaski Rd	Cook	T-1A
53		TS220	US 6 159 th St	Dixie Hwy	Cook	T-1A
54		TS225	US 6 (159th St)	Ellis Ave	Cook	T-1A
55	09	TS230	US 6 (159th St)	Greenwood Rd	Cook	T-1A
56	01	TS235	US 6 (159th St)	71st Ct	Cook	T-1A
57	01	TS240	US 6 (159th St)	84th Ave	Cook	T-1A
58	04	TS245	US 6 (159th St)	Kedzie Ave	Cook	T-1A
59		TS250	US 6 159 th St	Myrtle Ave	Cook	T-1A
60	01	TS255	US 6 (159th St)	Oak Park Ave	Cook	T-1A
61	03	TS265	US 6 (159th St)	Park Ave / River Oaks Golf Ent	Cook	T-1A
62	03	TS270	US 6 (159th St)	Paxton Ave	Cook	T-1A
63	01	TS275	US 6 (159th St)	Ridgeland Ave	Cook	T-1A
64	03	TS280	US 6 (159th St)	Ring Rd	Cook	T-1A
65	02	TS285	US 6 (159th St)	School St	Cook	T-1A
66	04	TS290	US 6 (159th St)	South Park Ave / Chicago Rd	Cook	T-1A
67		TS293	US 6 159 th St	162 nd @ Wausau	Cook	T-1A
68	04	TS295	US 6 (159th St)	State St / Indiana Ave	Cook	T-1A
69	02	TS300	US 6 (159th St)	Thornton Blue Island Rd	Cook	T-1A
70		TS305	US 6 (159th St)	Van Dam Rd	Cook	T-1A
71	03	TS310	US 6 (159th St)	Vincennes Ave / Vandrunen Rd	Cook	T-1A
72		TS315	US 6 159 th St	Wood St	Cook	T-1A
73	10	TS320	US 6 (159th St)	Woodlawn Ave	Cook	T-1A
74	01	TS325	US 6 (159th St)	Laramie Ave	Cook	T-1A
75	02	TS326	IL 21 (Milwaukee Ave)	US 14 (Dempster St)	Cook	T-1A
76	01	TS330	US 6 (159th St)	88th Ave	Cook	T-1A
77	02	TS345	US 6/IL 83 (Torrence Ave)	River Oaks South Entrance	Cook	T-1A
78	02	TS350	US 6/IL 83 (Torrence Ave)	River Oaks Center Entrance	Cook	T-1A
79	02	TS355	US 6/IL 83 (Torrence Ave)	River Oaks North Entrance	Cook	T-1A
80	10	TS365	US 12 (Rand Rd)	US 12/45 (Des Plaines River Rd)	Cook	T-1A
81	10	TS370	US 12 Rand Rd	US 12 Elk Blvd	Cook	T-1A
82	10	TS375	US 12 Rand Rd	IL 58 Golf Rd	Cook	T-1A
83	01	TS380	US 12 (Rand Rd)	IL 83 Elmhurst Rd & Foundry Rd	Cook	T-1A
84		TS385	US 12 Rand Rd	Baldwin Rd Williams Dr	Cook	T-1A
85	04	TS390	US 12 (Rand Rd)	Camp McDonald Rd	Cook	T-1A
86	04	TS392	US 12 (Rand Rd)	Schoenbeck Rd	Cook	T-1A
87	04	TS395	US 12 (Rand Rd)	Euclid St	Cook	T-1A
88	04	TS400	US 12 (Rand Rd)	Hintz Rd	Cook	T-1A
89	04	TS405	US 12 (Rand Rd)	Kennicott Dr	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
90	08	TS410	US 12 (Rand Rd)	Lake Cook Road	Cook	T-1A
91	04	TS415	US 12 (Rand Rd)	Clarence Ave / Dryden Ave	Cook	T-1A
92	04	TS419	US 12 (Rand Rd)	Olive St	Cook	T-1A
93	04	TS420	US 12 (Rand Rd)	Thomas Ave / Willow Rd	Cook	T-1A
94	04	TS421	US 12 (Rand Rd)	Beverly Ln	Cook	T-1A
95		TS425	US 12 Rand Rd	Wolf Rd	Cook	T-1A
96		TS427	US 12 20 95 th St	I 294 Ramp B	Cook	T-1A
97		TS430	US 12/20 (95th St)	US 12/20/45 (La Grange Rd)	Cook	T-1A
98	01	TS435	US 12/20 (95th St)	IL 50 (Cicero Ave)	Cook	T-1A
99	02	TS440	US 12/20 (95th St)	52nd Ave	Cook	T-1A
100	02	TS445	US 12/20 (95th St)	54th Ave	Cook	T-1A
101		TS450	US 12 20 95 th St	78 th Ave	Cook	T-1A
102	01	TS460	US 12/20 (95th St)	Campbell Ave	Cook	T-1A
103	01	TS465	US 12/20 (95th St)	Central Ave	Cook	T-1A
104	02	TS470	US 12/20 (95th St)	Chicago Ridge Mall Drive	Cook	T-1A
105	01	TS475	US 12/20 (95th St)	Cook Ave	Cook	T-1A
106	02	TS480	US 12/20 (95th St)	Crawford Ave / Pukaski Rd	Cook	T-1A
107	01	TS481	US 12/20 (95th St)	Keeler Ave	Cook	T-1A
108	02	TS485	US 12/20 (95th St)	Kedzie Ave	Cook	T-1A
109	01	TS490	US 12/20 (95th St)	Kostner Ave	Cook	T-1A
110	02	TS495	US 12/20 (95th St)	K Mart Entrance	Cook	T-1A
111	01	TS500	US 12/20 (95th St)	Millard Ave	Cook	T-1A
112		TS502	US 20 (Lake St)	Naperville Rd	Cook	T-1A
113		TS503	US 20 (Lake St)	Rose Ln / Lambert	Cook	T-1A
114	02	TS505	US 12/20 (95th St)	Chicago Ridge Mall Drive	Cook	T-1A
115	02	TS510	US 12/20 (95th St)	Oak Park Ave	Cook	T-1A
116	01	TS515	US 12/20 (95th St)	Melvina Ave	Cook	T-1A
117	01	TS520	US 12/20 (95th St)	Ridgeland Ave	Cook	T-1A
118		TS525	US 12 20 95 th St	Roberts Rd	Cook	T-1A
119	03	TS530	US 12/20 (95th St)	IL 7 (Southwest Highway)	Cook	T-1A
120	03	TS535	US 12/20 (95th St)	Western Ave	Cook	T-1A
121	01	TS540	US 12/20 (95th St)	Homan Ave	Cook	T-1A
122		TS741	IL 19 (Irving Park Rd)	Shales Parkway	Cook	T-1A
123	04	TS742	IL 19 (Irving Park Rd)	Poplar Creek Dr	Cook	T-1A
124		TS743	IL 19 (Irving Park Rd)	Rohrsen Rd	Cook	T-1A
125	04	TS744	IL 19 (Irving Park Rd)	Schaumburg Rd	Cook	T-1A
126	03	TS1007	123rd St / McCarthy Rd	Will Cook Rd	Cook	T-1A
127		TS1009	123rd St / McCarthy Rd	Bell Rd	Cook	T-1A
128	01	TS1010	US 12/20/45 (Mannheim Rd)	US 20 (Lake St)	Cook	T-1A
129		TS1011	123rd St / McCarthy Rd	Wolf Rd	Cook	T-1A
130		TS1015	US 12/20/45 (Mannheim Rd)	IL 38 (Roosevelt Rd)	Cook	T-1A
131	01	TS1020	US 12/20/45 (Mannheim Rd)	Washington Blvd	Cook	T-1A
132	01	TS1022	IL 59 (Sutton Rd)	US 20 (Lake St) N Ramps	Cook	T-1A
133	01	TS1023	IL 59 (Sutton Rd)	US 20 (Lake St) S Ramps	Cook	T-1A
134	09	TS1025	US 12/20/45 (LaGrange Rd)	31st St	Cook	T-1A
135	01	TS1030	US 12/20/45 (LaGrange Rd)	47th St	Cook	T-1A
136	02	TS1035	US 12/20/45 (LaGrange Rd)	55th St	Cook	T-1A
137	02	TS1040	US 12/20/45 (LaGrange Rd)	67th St	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
138	02	TS1043	US 12/20/45 (LaGrange Rd)	63rd St	Cook	T-1A
139		TS1045	US 12/20/45 (LaGrange Rd)	87th St	Cook	T-1A
140	01	TS1050	US 12/20/45 (LaGrange Rd)	22nd St / Cermak Rd	Cook	T-1A
141	09	TS1055	US 12/20/45 (LaGrange Rd)	Countryside Plaza Entrance	Cook	T-1A
142	01	TS1060	US 12/20/45 (LaGrange Rd)	Joliet Rd	Cook	T-1A
143	09	TS1065	US 12/20/45 (LaGrange Rd)	Plainfield Rd	Cook	T-1A
144	01	TS1070	US 12/20/45 (Mannheim Rd)	Randolph St	Cook	T-1A
145	01	TS1075	US 12/20/45 (Mannheim Rd)	St Charles Rd	Cook	T-1A
146	01	TS1080	US 12/20/45 (Mannheim Rd)	Madison St	Cook	T-1A
147	10	TS1085	US 12/45 (Lee St)	US 45 (Des Plaines River Rd)	Cook	T-1A
148	10	TS1090	US 12/45 (Elk Blvd)	US 45 (Des Plaines River Rd)	Cook	T-1A
149	01	TS1095	US 12/45 (Mannheim Rd)	IL 19 (Irving Park Rd)	Cook	T-1A
150		TS1100	US 12/45 (Mannheim Rd)	IL 72 (Higgins Rd)	Cook	T-1A
151	10	TS1102	IL 72 (Higgins Rd)	Willow Creek Health Club Ent	Cook	T-1A
152		TS1105	US 12 45 Mannheim Rd	Armitage St	Cook	T-1A
153		TS1110	US 12 45 Mannheim Rd	Fullerton Ave	Cook	T-1A
154		TS1114	US 12 45 Mannheim Rd	Wrightwood	Cook	T-1A
155		TS1115	US 12 45 Mannheim Rd	Melrose Crossing	Cool	T-1A
156		TS1120	US 12 45 Mannheim Rd	Melrose Crossing	Cook	T-1A
157		TS1125	US 12/45 (Mannheim Rd)	Lawrence Ave	Cook	T-1A
158	04	TS1130	US 12/45 (Lee St)	Oakton St	Cook	T-1A
159	04	TS1135	US 12/45 (Mannheim Rd)	Touhy Ave	Cook	T-1A
160		TS1137	US 12/45 (Mannheim Rd)	Lunt Ave	Cook	T-1A
161	01	TS1140	US 12/45 (Mannheim Rd)	United Parkway	Cook	T-1A
162	02	TS1145	US 12/45 (Mannheim Rd)	Montrose Ave / O'Hare Access Rd	Cook	T-1A
163	04/08	TS1150	US 12/IL 53 (Rand Rd)	IL 53 (Hicks Rd)	Cook	T-1A
164		TS1155	US 12 IL 53 Rand Rd	IL 53 IL 68 Dundee Rd	Cook	T-1A
165		TS1157	IL 68 Dundee Rd	Lynda Dr Access Dr	Cook	T-1A
166		TS1160	US 14 IL 58 Rand Rd	Old Hicks Rd Coach	Cook	T-1A
167		TS1165	US 14/IL 58 (Dempster St)	US 14/IL 43 (Waukegan Rd)	Cook	T-1A
168	10	TS1170	US 14 (Northwest Highway)	US 14 (Baldwin Rd)	Cook	T-1A
169	10	TS1172	US 14 (Northwest Highway)	Sterling Ave	Cook	T-1A
170	10	TS1175	US 14 (Caldwell Ave)	US 14/IL 43 (Waukegan Rd)	Cook	T-1A
171	04	TS1180	US 14 (Northwest Highway)	IL 53 E Ramp	Cook	T-1A
172	04	TS1185	US 14 (Northwest Highway)	IL 53 W Ramp	Cook	T-1A
173		TS1190	US 14 (Northwest Highway)	Benton St	Cook	T-1A
174	02	TS1200	US 14 (Dempster St)	Cumberland Ave	Cook	T-1A
175	02	TS1205	US 14 (Dempster St)	Dee Rd	Cook	T-1A
176	02	TS1210	US 14 (Dempster St)	Greenwood Rd	Cook	T-1A
177	02	TS1213	US 14 (Dempster St)	Western Ave	Cook	T-1A
178	10	TS1215	US 14 (Caldwell Ave)	Gross Point Rd	Cook	T-1A
179		TS1220	US 14 (Dempster St)	Harlem Ave	Cook	T-1A
180	10	TS1225	US 14 (Northwest Highway)	Hicks Rd S Jct / Linden Ave	Cook	T-1A
181	04	TS1230	US 14 (Caldwell Ave)	Howard St	Cook	T-1A
182	04	TS1235	US 14 (Northwest Highway)	Hicks Pl / Lincoln St	Cook	T-1A
183	02	TS1240	US 14 (Dempster St)	Luther Ln	Cook	T-1A
184		TS1245	US 14 (Northwest Highway)	Lake Cook Rd	Cook	T-1A
185	04	TS1250	US 14 (Northwest Highway)	US Post Office Entrance	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
186	10	TS1255	US 14 (Northwest Highway)	Mt Prospect Rd	Cook	T-1A
187	10	TS1260	US 14 (Caldwell Ave)	Oakton St	Cook	T-1A
188	09	TS1265	US 14 (Dempster St)	Ozark St	Cook	T-1A
189		TS1270	US 14 (Northwest Highway)	Palatine Rd	Cook	T-1A
190		TS1275	US 14 Dempster St	Potter Rd	Cook	T-1A
191		TS1280	US 14 (Baldwin Rd)	Quentin Rd	Cook	T-1A
192	10	TS1285	US 14 (Miner St)	Rand Rd	Cook	T-1A
193	10	TS1290	US 14 (Northwest Highway)	Rohllwing Rd	Cook	T-1A
194	09	TS1295	US 14 (Dempster St)	Shermer Rd	Cook	T-1A
195		TS1300	US 14 (Northwest Highway)	Smith Rd	Cook	T-1A
196	10	TS1305	US 14 (Caldwell Ave)	Touhy Ave	Cook	T-1A
197	10	TS1310	US 14 (Northwest Highway)	Wilke Rd	Cook	T-1A
198		TS1315	US 14 (Northwest Highway)	Plum Grove Rd	Cook	T-1A
199		TS1320	US 20 (Lake St)	Bluff City Rd	Cook	T-1A
200	10	TS1325	US 20 (Lake St)	Oak Ave	Cook	T-1A
201	10	TS1330	US 20 (Lake St)	Park Ave	Cook	T-1A
202	01	TS1335	US 20 (Lake St)	44th Ave	Cook	T-1A
203	10	TS1338	US 20 (Lake St)	I-294 Tollway Ramp	Cook	T-1A
204	04	TS1340	US 30 (Lincoln Highway)	US 30/IL 83 (Glenwood Dyer Rd)	Cook	T-1A
205		TS1345	IL 1 Chicago	US 30 Lincoln Hwy	Cook	T-1A
206	03	TS1350	US 30 (Lincoln Highway)	IL 43 (Harlem Ave)	Cook	T-1A
207	03	TS1355	US 30 (Lincoln Highway)	IL 50 (Cicero Ave)	Cook	T-1A
208		TS1357	IL 50 Cicero Ave	207 th	Cook	T-1A
209		TS1358	IL 50 Cicero Ave	Morning Glory Village Commons	Cook	T-1A
210		TS1360	US 30 (Lincoln Highway)	Cottage Grove Ave	Cook	T-1A
211	03	TS1365	US 30 (Lincoln Highway)	Division St	Cook	T-1A
212		TS1370	US 30 (Lincoln Highway)	Ford Motor Plant Entrance	Cook	T-1A
213	09	TS1375	US 30 (Lincoln Highway)	Governors Hwy Crawford Ave	Cook	T-1A
214	03	TS1376	Governors Highway	212th Pl	Cook	T-1A
215		TS1380	US 30 Lincoln Hwy	Halsted St	Cook	T-1A
216	03	TS1385	US 30 (Lincoln Highway)	Main St	Cook	T-1A
217	03	TS1390	US 30 (Lincoln Highway)	Olympian Way	Cook	T-1A
218	03	TS1395	US 30 (Lincoln Highway)	Orchard Dr	Cook	T-1A
219	09	TS1400	US 30 (Lincoln Highway)	Ridgeland Ave	Cook	T-1A
220	03	TS1405	US 30 IL 83 Lincoln Hwy	Sauk Trail Rd	Cook	T-1A
221		TS1410	US 30 Lincoln Hwy	State St	Cook	T-1A
222		TS1415	US 30 (Lincoln Highway)	Torrence Ave	Cook	T-1A
223	04	TS1420	US 30 (Lincoln Highway)	Western Ave	Cook	T-1A
224		TS1425	US 30 (Lincoln Highway)	Woodlawn Ave	Cook	T-1A
225	03	TS1430	US 30 (Lincoln Highway)	Lindenwood Dr / Lincoln Mall Entrance	Cook	T-1A
226	03	TS1435	US 30 (Lincoln Highway)	Ashland Ave	Cook	T-1A
227		TS1437	US 30 (Lincoln Highway)	Access Rd / Transportation Dr	Cook	T-1A
228	09	TS1440	US 30 (Lincoln Highway)	Brookwood Dr	Cook	T-1A
229	03	TS1445	US 30 (Lincoln Highway)	Hilltop Ave	Cook	T-1A
230	03	TS1450	US 30 (Lincoln Highway)	Kostner Ave	Cook	T-1A
231	03	TS1455	US 34 (Ogden Ave)	IL 43 (Harlem Ave)	Cook	T-1A
232		TS1460	US 34 (Ogden Ave)	39th St / Miller Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
233	02	TS1465	US 34 (Ogden Ave)	Gilbert Ave / Nazareth Academy	Cook	T-1A
234		TS1470	US 34 (Ogden Ave)	Joliet Rd	Cook	T-1A
235	02	TS1480	US 34 (Ogden Ave)	Wolf Rd	Cook	T-1A
236		TS1485	US 41 (Lincoln Ave)	US 41/IL 50 (Cicero Ave)	Cook	T-1A
237	10	TS1490	IL 58 (Dempster St)	US 41 (Skokie Blvd)	Cook	T-1A
238	10	TS1495	US 41 (Skokie Blvd)	Church St	Cook	T-1A
239		TS1500	US 41 (Lincoln Ave)	Crawford Ave	Cook	T-1A
240	10	TS1505	US 41 (Lincoln Ave)	Devon Ave	Cook	T-1A
241	02	TS1510	US 41 (Skokie Blvd)	East Lake Ave	Cook	T-1A
242	02	TS1515	US 41 (Skokie Blvd)	Edens Plaza SC Entrance	Cook	T-1A
243		TS1520	US 41 Skokie Blvd	Emerson St	Cook	T-1A
244		TS1525	US 41 Skokie Blvd	Golf Rd	Cook	T-1A
245	10	TS1530	US 41 (Skokie Blvd)	Gross Point Rd	Cook	T-1A
246	02	TS1535	US 41 (Skokie Blvd)	Hibbard Rd	Cook	T-1A
247		TS1540	US 41 (Skokie Blvd)	Howard St	Cook	T-1A
248		TS1545	US 41 (Lincoln Ave)	Kostner Ave	Cook	T-1A
249		TS1555	US 41 Skokie Blvd	Foster St	Cook	T-1A
250	10	TS1560	US 41 (Skokie Blvd)	Main St	Cook	T-1A
251	02	TS1565	US 41 (Skokie Blvd)	New Glenview Rd	Cook	T-1A
252	10	TS1570	US 41 (Skokie Blvd)	Niles Center Rd	Cook	T-1A
253	04	TS1574	Niles Center Rd	Fargo Ave	Cook	T-1A
254		TS1575	US 41 (Skokie Blvd)	Oakton St	Cook	T-1A
255	02	TS1580	US 41 (Skokie Blvd)	Old Glenview Rd	Cook	T-1A
256	10	TS1590	US 41 (Skokie Blvd)	Old Orchard Rd	Cook	T-1A
257	10	TS1595	US 41 (Skokie Blvd)	Old Orchard North Entrance	Cook	T-1A
258	10	TS1600	US 41 (Skokie Blvd)	Old Orchard Center Entrance	Cook	T-1A
259		TS1605	US 41 Skokie Blvd	Old Orchard SC South Ent	Cook	T-1A
260	10	TS1610	US 41 (Lincoln Ave)	Pratt Ave	Cook	T-1A
261		TS1613	Crawford Ave	Pratt Ave	Cook	T-1A
262		TS1615	US 41 (Lincoln Ave)	Touhy Ave	Cook	T-1A
263		TS1617	IL 72 (Touhy Ave)	Kilbourn Ave	Cook	T-1A
264	02	TS1620	US 41 (Skokie Blvd)	Wilmette Ave	Cook	T-1A
265		TS1625	US 45 (Des Plaines River Rd)	IL 58 (Golf Rd)	Cook	T-1A
266	10	TS1626	US 45 (Des Plaines River Rd)	Nazareth Way / Holy Family Hosp	Cook	T-1A
267		TS1630	US 45 (LaGrange Rd)	107th St	Cook	T-1A
268	01	TS1631	111th St	84th Ave	Cook	T-1A
269	03	TS1632	111th St	Kean Ave	Cook	T-1A
270	03	TS1633	104th Ave	107th St	Cook	T-1A
271		TS1635	US 45 (LaGrange Rd)	111th St	Cook	T-1A
272	02	TS1640	US 45 (LaGrange Rd)	131st St	Cook	T-1A
273		TS1645	US 45 (LaGrange Rd)	135th St	Cook	T-1A
274	01	TS1655	US 45 (LaGrange Rd)	147th St	Cook	T-1A
275	02	TS1660	US 45 (LaGrange Rd)	149th St	Cook	T-1A
276	02	TS1665	US 45 (LaGrange Rd)	151st St	Cook	T-1A
277	02	TS1670	US 45 (LaGrange Rd)	153rd St	Cook	T-1A
278	04	TS1675	US 45 (Des Plaines River Rd)	Central Rd	Cook	T-1A
279		TS1676	Central Rd	East River Rd	Cook	T-1A
280	10	TS1677	Central Rd	Oakton Community College	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
281	04	TS1680	US 45 (Des Plaines River Rd)	Euclid Ave / West Lake Ave	Cook	T-1A
282	04	TS1685	US 45 (Des Plaines River Rd)	Kensington Rd / Foundry Rd	Cook	T-1A
283	09	TS1690	US 45 LaGrange Rd	McCarthy Rd 123 rd St	Cook	T-1A
284		TS1695	US 45 DesPlaines River Rd	Old Willow Rd	Cook	T-1A
285	01	TS1700	US 45 (LaGrange Rd)	167th St	Cook	T-1A
286	04	TS1701	US 45 (LaGrange Rd)	163rd St	Cook	T-1A
287	02	TS1705	US 45 (LaGrange Rd)	Lakeview Plaza Dr	Cook	T-1A
288	02	TS1710	US 45 (LaGrange Rd)	Carl Sandburg High School Ent	Cook	T-1A
289	04	TS1712	US 45 (Des Plaines River Rd)	Camp McDonald Rd	Cook	T-1A
290	10	TS1715	US 45/IL 21 (Milwaukee Ave)	IL 68 (Dundee Rd)	Cook	T-1A
291	04	TS1720	US 45/IL 21 (Milwaukee Ave)	Hintz Rd	Cook	T-1A
292	08	TS1724	US 45/IL 21 (Milwaukee Ave)	Lake Cook Rd S Ramps	Cook	T-1A
293	08	TS1726	US 45/IL 21 (Milwaukee Ave)	Lake Cook Rd N Ramps	Cook	T-1A
294	08	TS1730	US 45/IL 21 (Milwaukee Ave)	Wolf Rd	Cook	T-1A
295		TS1735	US 45 IL 21 Milwaukee Ave	Apple Dr	Cook	T-1A
296	10	TS1740	US 45/IL 21 (Milwaukee Ave)	Palatine Rd North Ramp	Cook	T-1A
297		TS1745	US 45 IL 21 Milwaukee Ave	Palatine Rd South Ramp	Cook	T-1A
298	01	TS1750	US 45 (LaGrange Rd)	144th Pl	Cook	T-1A
299	04	TS1755	IL 1 (Halsted St)	IL 1 (Halsted St) Cutoff / Parkside	Cook	T-1A
300	10	TS1760	IL 1 (Halsted St)	IL 1 (Vincennes Rd)	Cook	T-1A
301		TS1765	IL 83 Sibley Blvd 147 th St	IL 1 Halsted St	Cook	T-1A
302	09	TS1770	IL 1 Chicago Rd	15 th St	Cook	T-1A
303		TS1775	IL 1 Chicago Rd	16 th St	Cook	T-1A
304		TS1780	IL 1 (Chicago Rd)	26th St	Cook	T-1A
305	09	TS1785	IL 1 (Halsted St)	123rd St	Cook	T-1A
306	04	TS1790	IL 1 (Halsted St)	127th St	Cook	T-1A
307	04	TS1795	IL 1 (Halsted St)	138th St	Cook	T-1A
308		TS1800	IL 1 Halsted St	149 th St	Cook	T-1A
309		TS1805	IL 1 Halsted St	152 nd St	Cook	T-1A
310	03	TS1810	IL 1 (Halsted St)	157th St	Cook	T-1A
311	03	TS1815	IL 1 (Halsted St)	163rd St	Cook	T-1A
312	09	TS1820	IL 1 (Halsted St)	167th St	Cook	T-1A
313	04	TS1825	IL 1 (Halsted St)	171st St	Cook	T-1A
314	09	TS1830	IL 1 (Halsted St)	183rd St	Cook	T-1A
315	04	TS1835	IL 1 (Halsted St)	Holbrook Rd	Cook	T-1A
316	04	TS1840	IL 1 (Halsted St)	187th St	Cook	T-1A
317	04	TS1845	IL 1 (Halsted St) Cut Off	IL 1 (Chicago Rd) / Riegel Rd	Cook	T-1A
318	03	TS1850	IL 1 (Halsted St)	Joe Orr Rd	Cook	T-1A
319	09	TS1855	IL 1 (Halsted St)	Ridge Rd	Cook	T-1A
320		TS1860	IL 1 (Chicago Rd)	Sauk Trail Rd	Cook	T-1A
321		TS1865	IL 1 (Chicago Rd)	Steger Rd	Cook	T-1A
322	09	TS1870	IL 1 (Halsted St)	Vollmer Rd	Cook	T-1A
323	04	TS1875	IL 1 (Halsted St)	Maple Gate 3	Cook	T-1A
324	04	TS1880	IL 1 (Halsted St)	175th St	Cook	T-1A
325		TS1885	IL 1 Chicago Vincennes	Dixie Hwy	Cook	T-1A
326	09	TS1890	IL 7 (Southwest Highway)	IL 43 (Harlem Ave)	Cook	T-1A
327		TS1895	IL 7 (Southwest Highway)	IL 83 (Cal Sag Rd) / 80th Ave	Cook	T-1A
328	03	TS1899	80th Ave	123rd St / McCarthy Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
329	03	TS1900	IL 7 (Southwest Highway)	111th St	Cook	T-1A
330	04	TS1903	IL 7 (Southwest Highway)	117th St	Cook	T-1A
331		TS1904	IL 7 (Southwest Highway)	114th St / Metra Train Station	Cook	T-1A
332	09	TS1905	IL 7 (Southwest Highway)	131st St	Cook	T-1A
333	01	TS1910	IL 7 (Southwest Highway)	135th St	Cook	T-1A
334	03	TS1911	131st St	76th Ave	Cook	T-1A
335		TS1913	131st St	86 th Ave	Cook	T-1A
336	01	TS1915	IL 7 (Southwest Highway)	143rd St	Cook	T-1A
337	03	TS1920	IL 7 (143rd St)	West Ave / 100th Ave	Cook	T-1A
338	09	TS1925	IL 43 (Harlem Ave)	IL 19 (Irving Park Rd)	Cook	T-1A
339	01	TS1930	IL 59 (Sutton Rd)	IL 19 (Irving Park Rd)	Cook	T-1A
340		TS1932	IL 19 (Irving Park Rd)	Madison Dr	Cook	T-1A
341	01	TS1935	IL 19 (Irving Park Rd)	Bartlett Rd	Cook	T-1A
342		TS1937	IL 59 (Sutton Rd)	Gulf Keys Rd	Cook	T-1A
343	01	TS1940	IL 171 (Cumberland Ave)	IL 19 (Irving Park Rd)	Cook	T-1A
344		TS1945	IL 19 Irving Park Rd	DesPlaines River	Cook	T-1A
345		TS1948	Des Plaines River Rd	Ivanhoe Ave	Cook	T-1A
346		TS1950	IL 19 (Irving Park Rd)	Forest Preserve Dr	Cook	T-1A
347		TS1953	IL 19 Irving Park Rd	Judd Ave	Cook	T-1A
348	10	TS1955	IL 19 (Irving Park Rd)	Oriole Ave	Cook	T-1A
349		TS1957	IL 19 (Irving Park Rd)	Seymour Ave	Cook	T-1A
350		TS1960	IL 19 Irving Park Rd	Ruby St 25 th	Cook	T-1A
351	09	TS1965	IL 19 (Irving Park Rd)	Springingsuth Rd	Cook	T-1A
352	09	TS1966	Elgin O'Hare E Frontage Rd	Springingsuth Rd	Cook	T-1A
353	09	TS1967	Elgin O'Hare W Frontage Rd	Springingsuth Rd	Cook	T-1A
354		TS1970	IL 19 Irving Park Rd	Wesley Terrace	Cook	T-1A
355	01	TS1975	IL 19 (Irving Park Rd)	Wise Rd	Cook	T-1A
356	01	TS1976	IL 19 (Irving Park Rd)	Mercury Dr	Cook	T-1A
357	01	TS1980	IL 19 (Irving Park Rd)	Sunnysdale Blvd	Cook	T-1A
358	01	TS1985	IL 19 (Irving Park Rd)	East Ave	Cook	T-1A
359	05	TS1987	IL 19 (Irving Park Rd)	Taft Ave / Cargo Access Dr	Cook	T-1A
360	02	TS1990	IL 21 (Milwaukee Ave)	IL 43 (Harlem Ave)	Cook	T-1A
361	02	TS1995	IL 21 (Milwaukee Ave)	IL 58 (Golf Rd)	Cook	T-1A
362	02	TS2000	IL 21 (Milwaukee Ave)	Ballard Rd	Cook	T-1A
363	02	TS2005	IL 21 (Milwaukee Ave)	Central Rd	Cook	T-1A
364	02	TS2010	IL 21 (Milwaukee Ave)	Dearlove Rd / Glenview Rd	Cook	T-1A
365	02	TS2015	IL 21 (Milwaukee Ave)	Greenwood Rd	Cook	T-1A
366	02	TS2020	IL 21 (Milwaukee Ave)	Howard St	Cook	T-1A
367	04	TS2025	IL 21 (Milwaukee Ave)	Main St	Cook	T-1A
368	02	TS2030	IL 21 (Milwaukee Ave)	Maryland St	Cook	T-1A
369	10	TS2035	IL 21 (Milwaukee Ave)	Oak Mill Mall Entrance	Cook	T-1A
370	10	TS2040	IL 21 (Milwaukee Ave)	Oakton St	Cook	T-1A
371		TS2045	IL 21 Milwaukee Ave	Sanders Rd	Cook	T-1A
372	10	TS2050	IL 21 (Milwaukee Ave)	Euclid Ave / West Lake Ave	Cook	T-1A
373	02	TS2055	IL 21 (Milwaukee Ave)	Zenith Dr / Castilian Ct	Cook	T-1A
374	02	TS2060	IL 21 (Milwaukee Ave)	Golf Mill Center Dr Entrance	Cook	T-1A
375	02	TS2065	IL 21 (Milwaukee Ave)	Golf Mill North Dr Entrance	Cook	T-1A
376	09	TS2070	IL 38 (Roosevelt Rd)	Harrison St / Hamilton Ave	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
377		TS2075	IL 38 (Roosevelt Rd)	Wolf Rd	Cook	T-1A
378		TS2077	IL 38 (Roosevelt Rd)	Fencil Ln	Cook	T-1A
379	10	TS2080	IL 43 (Harlem Ave)	IL 43 (Oakton St)	Cook	T-1A
380	10	TS2085	IL 43 (Waukegan Rd)	IL 43 (Oakton St)	Cook	T-1A
381	10	TS2087	Oakton St	Niles Civic Center Plaza Entrance	Cook	T-1A
382	10	TS2090	IL 58 (Golf Rd)	IL 43/IL 58 (Waukegan Rd)	Cook	T-1A
383	02	TS2095	IL 43 (Harlem Ave)	IL 64 (North Ave)	Cook	T-1A
384	10	TS2100	IL 43 (Waukegan Rd)	IL 68 (Dundee Rd)	Cook	T-1A
385	03	TS2105	IL 43 (Harlem Ave)	IL 83 / 119th St / College Dr	Cook	T-1A
386	03	TS2110	IL 43 (Harlem Ave)	16th St	Cook	T-1A
387		TS2115	IL 43 (Harlem Ave)	23rd St	Cook	T-1A
388		TS2120	IL 43 (Harlem Ave)	25th St	Cook	T-1A
389	01	TS2125	IL 43 (Harlem Ave)	26th St	Cook	T-1A
390	01	TS2130	IL 43 (Harlem Ave)	39th St / Pershing Rd	Cook	T-1A
391	02	TS2135	IL 43 (Harlem Ave)	47th St	Cook	T-1A
392	02	TS2140	IL 43 (Harlem Ave)	57th St	Cook	T-1A
393	02	TS2145	IL 43 (Harlem Ave)	60th St	Cook	T-1A
394	02	TS2150	IL 43 (Harlem Ave)	63rd St	Cook	T-1A
395	09	TS2155	IL 43 (Harlem Ave)	63rd St Cutoff	Cook	T-1A
396	02	TS2160	IL 43 (Harlem Ave)	65th St	Cook	T-1A
397		TS2165	IL 42 Harlem Ave	71 st St	Cook	T-1A
398	02	TS2170	IL 43 (Harlem Ave)	75th Pl	Cook	T-1A
399	02	TS2175	IL 43 (Harlem Ave)	79th Pl	Cook	T-1A
400	02	TS2180	IL 43 (Harlem Ave)	83rd St	Cook	T-1A
401	02	TS2185	IL 43 (Harlem Ave)	87th St	Cook	T-1A
402	02	TS2190	IL 43 (Harlem Ave)	88th St / Southfield SC Dr Entrance	Cook	T-1A
403	02	TS2195	IL 43 (Harlem Ave)	90th St / Cambridge St	Cook	T-1A
404	03	TS2200	IL 43 (Harlem Ave)	99th St	Cook	T-1A
405	03	TS2205	IL 43 (Harlem Ave)	103rd St	Cook	T-1A
406		TS2210	IL 43 (Harlem Ave)	111th St	Cook	T-1A
407	03	TS2215	IL 43 (Harlem Ave)	115th St	Cook	T-1A
408	03	TS2220	IL 43 (Harlem Ave)	123rd St	Cook	T-1A
409	04	TS2225	IL 43 (Harlem Ave)	127th St	Cook	T-1A
410	04	TS2226	IL 43 (Harlem Ave)	127th St	Cook	T-1A
411	03	TS2230	IL 43 (Harlem Ave)	131st St	Cook	T-1A
412	03	TS2235	IL 43 (Harlem Ave)	135th St	Cook	T-1A
413	09	TS2240	IL 43 (Harlem Ave)	151st St	Cook	T-1A
414	01	TS2245	IL 43 (Harlem Ave)	175th St	Cook	T-1A
415	01	TS2250	IL 43 (Harlem Ave)	157th St	Cook	T-1A
416	04	TS2255	IL 43 (Harlem Ave)	183rd St	Cook	T-1A
417	03	TS2256	183rd St	Oak Park Ave	Cook	T-1A
418	03	TS2260	IL 43 (Harlem Ave)	Archer Ave / 55th St	Cook	T-1A
419	09	TS2265	IL 43 (Harlem Ave)	Armitage Ave	Cook	T-1A
420	01	TS2270	IL 43 (Harlem Ave)	Augusta Blvd	Cook	T-1A
421	03	TS2275	IL 43 (Harlem Ave)	Bloomington Rd	Cook	T-1A
422	09	TS2280	IL 43 (Harlem Ave)	22nd St / Cermak Rd	Cook	T-1A
423		TS2285	IL 43 (Waukegan Rd)	Chestnut St	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
424	01	TS2290	IL 43 (Harlem Ave)	Chicago Ave	Cook	T-1A
425	01	TS2295	IL 43 (Harlem Ave)	Division St	Cook	T-1A
426	10	TS2300	IL 43 (Waukegan Rd)	East Lake Ave	Cook	T-1A
427	09	TS2305	IL 43 (Harlem Ave)	Forest Preserve Dr	Cook	T-1A
428		TS2310	IL 43 (Harlem Ave)	Foster Pl	Cook	T-1A
429	01	TS2315	IL 43 (Harlem Ave)	Garfield Ave / Harrison St	Cook	T-1A
430		TS2325	IL 43 (Harlem Ave)	Lawrence Ave	Cook	T-1A
431	02	TS2330	IL 43 (Harlem Ave)	Howard St	Cook	T-1A
432	02	TS2335	IL 43 (Harlem Ave)	92nd Pl / Stanford Dr	Cook	T-1A
433	02	TS2340	IL 43 (Harlem Ave)	84th St	Cook	T-1A
434	02	TS2345	IL 43 (Harlem Ave)	77th St	Cook	T-1A
435	02	TS2350	IL 43 (Harlem Ave)	Jackson Blvd	Cook	T-1A
436	03	TS2355	IL 43 (Harlem Ave)	41st St / Joliet Rd	Cook	T-1A
437	02	TS2360	IL 43 (Harlem Ave)	Lake St	Cook	T-1A
438	01	TS2362	US 20 (Lake St)	Bonnie Brae Pl	Cook	T-1A
439	01	TS2370	IL 43 (Harlem Ave)	Madison St	Cook	T-1A
440		TS2375	IL 43 (Harlem Ave)	Montrose Ave / Agatite Ave	Cook	T-1A
441		TS2377	IL 43 (Harlem Ave)	Montrose Ave / Persacola Ave	Cook	T-1A
442	01	TS2380	IL 43 (Harlem Ave)	North Blvd & South Blvd	Cook	T-1A
443	01	TS2385	IL 43 (Harlem Ave)	Ontario Ave	Cook	T-1A
444	01	TS2390	IL 43 (Harlem Ave)	Randolph St	Cook	T-1A
445	01	TS2395	IL 43 (Harlem Ave)	Riverside Dr / Longcommon Rd	Cook	T-1A
446	01	TS2400	IL 38 (Roosevelt Rd)	IL 43 (Harlem Ave)	Cook	T-1A
447	01	TS2401	IL 38 (Roosevelt Rd)	Lathrop Ave	Cook	T-1A
448		TS2406	IL 43 (Waukegan Rd)	Founders Rd	Cook	T-1A
449	09	TS2410	IL 43 (Harlem Ave)	Touhy Ave	Cook	T-1A
450	10	TS2411	IL 43 (Harlem Ave)	Pioneer Park / Joswiak Park	Cook	T-1A
451	01	TS2415	IL 43 (Harlem Ave)	Washington Blvd	Cook	T-1A
452	01	TS2420	IL 43 (Harlem Ave)	Wheeler Dr	Cook	T-1A
453	10	TS2425	IL 43 (Harlem Ave)	Willow Rd	Cook	T-1A
454		TS2430	IL 43 (Harlem Ave)	Wilson Ave	Cook	T-1A
455	04	TS2435	IL 43 (Waukegan Rd)	Winnetka Rd	Cook	T-1A
456		TS2445	IL 50 Cicero Ave	31 st St	Cook	T-1A
457		TS2450	IL 50 Cicero Ave	39 th St Pershing Rd	Cook	T-1A
458	02	TS2451	IL 50 (Cicero Ave)	Burbank Station Entrance	Cook	T-1A
459	02	TS2455	IL 50 (Cicero Ave)	65th St	Cook	T-1A
460	02	TS2456	IL 50 (Cicero Ave)	66th St	Cook	T-1A
461	02	TS2460	IL 50 (Cicero Ave)	67th St / Marquette Ave	Cook	T-1A
462		TS2465	IL 50 Cicero Ave	73 rd St State Rd	Cook	T-1A
463	02	TS2470	IL 50 (Cicero Ave)	79th St	Cook	T-1A
464	02	TS2475	IL 50 (Cicero Ave)	83rd St	Cook	T-1A
465	02	TS2480	IL 50 (Cicero Ave)	87th St	Cook	T-1A
466	01	TS2485	IL 50 (Cicero Ave)	94th St	Cook	T-1A
467		TS2490	IL 50 Cicero Ave	99 th St	Cook	T-1A
468	02	TS2495	IL 50 (Cicero Ave)	103rd St	Cook	T-1A
469		TS2500	IL 50 Cicero Ave	107 th St	Cook	T-1A
470		TS2505	IL 50 Cicero Ave	110 th St	Cook	T-1A
471	02	TS2510	IL 50 (Cicero Ave)	111th St	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
472		TS2512	111th St	Laramie Ave / Jordan Dr	Cook	T-1A
473	02	TS2515	IL 50 (Cicero Ave)	113th St / State Bank of Alsip Ent	Cook	T-1A
474	02	TS2520	IL 50 (Cicero Ave)	115th St	Cook	T-1A
475	02	TS2525	IL 50 (Cicero Ave)	80th St	Cook	T-1A
476	02	TS2530	IL 50 (Cicero Ave)	91st St	Cook	T-1A
477	02	TS2535	IL 50 (Cicero Ave)	76th Pl / Ford City South Entrance	Cook	T-1A
478	02	TS2540	IL 50 (Cicero Ave)	88th Ave	Cook	T-1A
479	02	TS2545	IL 50 (Cicero Ave)	75th Pl / Ford City North Entrance	Cook	T-1A
480	02	TS2550	IL 50 (Cicero Ave)	72nd St	Cook	T-1A
481	02	TS2555	IL 50 (Cicero Ave)	122nd St	Cook	T-1A
482	02	TS2560	IL 50 (Cicero Ave)	123rd St	Cook	T-1A
483	02	TS2565	IL 50 (Cicero Ave)	127th St	Cook	T-1A
484	02	TS2566	127th St	I-294 E Ramps	Cook	T-1A
485	02	TS2567	127th St	I-294 W Ramps	Cook	T-1A
486	03	TS2570	IL 50 (Cicero Ave)	151st St	Cook	T-1A
487	04	TS2575	IL 50 (Cicero Ave)	155th St	Cook	T-1A
488	09	TS2580	IL 50 (Cicero Ave)	167th St	Cook	T-1A
489	03	TS2585	IL 50 (Cicero Ave)	183rd St	Cook	T-1A
490	10	TS2590	IL 50 (Cicero Ave)	Devon Ave	Cook	T-1A
491	03	TS2595	IL 50 (Cicero Ave)	Fieldcrest Dr / 166th St	Cook	T-1A
492	03	TS2600	IL 50 (Cicero Ave)	Flossmoor Rd	Cook	T-1A
493	10	TS2605	IL 50 (Cicero Ave)	Pratt Ave	Cook	T-1A
494	02	TS2620	IL 50 (Cicero Ave)	Southwest Hwy	Cook	T-1A
495		TS2620	IL 50 Cicero Ave	Southwest Hwy	Cook	T-1A
496		TS2625	IL 50 (Cicero Ave)	Touhy Ave	Cook	T-1A
497	04	TS2630	IL 50 (Cicero Ave)	Matteson Town Center Mall Ent	Cook	T-1A
498	03	TS2635	IL 50 (Cicero Ave)	Vollmer Rd	Cook	T-1A
499	04	TS2640	US 45 (LaGrange Rd)	131st St	Cook	T-1A
500	02	TS2645	IL 50/IL 83 (Cicero Ave)	IL 83 (Cal Sag Rd)	Cook	T-1A
501	02	TS2649	IL 50/IL 83 (Cicero Ave)	Rivercrest East Entrance	Cook	T-1A
502	02	TS2650	IL 50/IL 83 (Cicero Ave)	135th St	Cook	T-1A
503	02	TS2655	IL 50/IL 83 (Cicero Ave)	Midlothian Turnpike	Cook	T-1A
504		TS2660	IL 53 IL 68 Dundee Rd	IL 53 West Frontage	Cook	T-1A
505	10	TS2665	IL 53 East Ramps	IL 62 (Algonquin Rd)	Cook	T-1A
506	10	TS2670	IL 53 West Ramps	IL 62 (Algonquin Rd)	Cook	T-1A
507	08	TS2677	IL 53 (Hicks Rd)	Lake Cook Rd	Cook	T-1A
508		TS2685	IL 53 IL 68 Dundee Rd	Baldwin Rd	Cook	T-1A
509		TS2693	IL 56 (Butterfield Rd)	Darmstadt Rd	Cook	T-1A
510	01	TS2700	IL 59 (Sutton Rd)	IL 58 (Golf Rd)	Cook	T-1A
511		TS2705	IL 58 (Golf Rd)	IL 62 (Algonquin Rd)	Cook	T-1A
512		TS2707	IL 62 (Algonquin Rd)	Lowe's Ent	Cook	T-1A
513		TS2708	IL 62 (Algonquin Rd)	Market Place	Cook	T-1A
514	10	TS2710	IL 58 (Golf Rd)	IL 72 (Higgins Rd)	Cook	T-1A
515	10	TS2715	IL 58 (Golf Rd)	IL 83 (Elmhurst Rd)	Cook	T-1A
516		TS2720	IL 58 (Golf Rd)	Arlington Heights Rd	Cook	T-1A
517	09	TS2725	IL 58 (Golf Rd)	Barrington Rd	Cook	T-1A
518	04	TS2730	IL 58 (Golf Rd)	Bartlett Rd	Cook	T-1A
519	09	TS2735	IL 58 (Dempster St)	Bronx Ave	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
520	10	TS2740	IL 58 (Golf Rd)	Busse Rd	Cook	T-1A
521		TS2745	IL 58 (Dempster St)	CTA RR Terminal Entrance	Cook	T-1A
522	02	TS2750	IL 58 (Golf Rd)	Dee Rd	Cook	T-1A
523		TS2755	IL 58 Golf Rd	East River Rd	Cook	T-1A
524	09	TS2760	IL 58 (Golf Rd)	Gannon Dr	Cook	T-1A
525	04	TS2765	IL 58 (Golf Rd)	Goebbert Rd	Cook	T-1A
526	04	TS2767	IL 58 (Golf Rd)	International Plaza Rd	Cook	T-1A
527	04	TS2770	IL 58 (Golf Rd)	Gould Dr	Cook	T-1A
528	02	TS2775	IL 58 (Golf Rd)	Greenwood Ave	Cook	T-1A
529	10	TS2780	IL 58 (Golf Rd)	IL 43 (Harlem Ave)	Cook	T-1A
530	04	TS2785	IL 58 (Golf Rd)	6th Ave	Cook	T-1A
531	09	TS2790	IL 58 (Golf Rd)	Highland Blvd	Cook	T-1A
532	09	TS2795	IL 58 (Golf Rd)	Jones Rd / Salem Dr	Cook	T-1A
533	04	TS2800	IL 58 (Golf Rd)	Kraft Food Entrance	Cook	T-1A
534	10	TS2805	IL 58 (Dempster St)	Lockwood Ave	Cook	T-1A
535	10	TS2810	IL 58 (Golf Rd)	Meacham Rd	Cook	T-1A
536		TS2815	IL 58 (Golf Rd)	Wilke Rd	Cook	T-1A
537	10	TS2820	IL 58 (Golf Rd)	Niles Center Rd	Cook	T-1A
538	10	TS2825	IL 58 Golf Rd	Oakton Community College	Cook	T-1A
539	09	TS2830	IL 58 (Golf Rd)	Plum Grove Rd	Cook	T-1A
540		TS2835	IL 58 Golf Rd	Potter Rd	Cook	T-1A
541	10	TS2840	IL 58 (Golf Rd)	Roselle Rd	Cook	T-1A
542	10	TS2845	IL 58 (Golf Rd)	Shermer Rd	Cook	T-1A
543	02	TS2850	IL 58 (Golf Rd)	Washington St	Cook	T-1A
544	02	TS2855	IL 58 (Golf Rd)	Western Ave	Cook	T-1A
545	04	TS2860	IL 58 (Golf Rd)	3 Com Dr / Apollo Dr	Cook	T-1A
546	09	TS2865	IL 58 (Golf Rd)	Wolf Rd / Segers Rd	Cook	T-1A
547	09	TS2870	IL 58 (Golf Rd)	Moon Lake Rd / Walnut Ln	Cook	T-1A
548	04	TS2875	IL 58 (Golf Rd)	Meier Rd	Cook	T-1A
549	09	TS2880	IL 58 (Golf Rd)	Valley Lake	Cook	T-1A
550	02	TS2885	IL 58 (Golf Rd)	Four Flags Shopping Center Entrance	Cook	T-1A
551	10	TS2890	IL 62/IL 68 (Algonquin Rd)	IL59/IL 68 (Dundee Rd)	Cook	T-1A
552	09	TS2892	IL 59 (Sutton Rd)	Bartlett Rd	Cook	T-1A
553	04	TS2895	IL 59 (Sutton Rd)	IL 72 (Higgins Rd)	Cook	T-1A
554	09	TS2897	IL 59 (Sutton Rd)	Penny Rd	Cook	T-1A
555		TS2899	IL 59	Arboretum Blvd	Cook	T-1A
556	09	TS2900	IL 59 (Hough Rd/Hawthorne Rd)	Barrington Rd	Cook	T-1A
557	09	TS2905	IL 59 (Hough Rd/Hawthorne Rd)	Hillside Ave	Cook	T-1A
558	01	TS2910	IL 59 (Sutton Rd)	Schaumburg Rd	Cook	T-1A
559	09	TS2915	IL 59/IL 68 (Sutton Rd)	IL 62/IL 68 (Algonquin Rd)	Cook	T-1A
560	09	TS2920	IL 62/IL 68 (Algonquin Rd)	IL 68 (Dundee Rd) / Brinker Rd	Cook	T-1A
561	09	TS2922	IL 62 (Algonquin Rd)	Palatine Rd	Cook	T-1A
562	10	TS2925	IL 62 (Algonquin Rd)	IL 83 (Elmhurst Rd)	Cook	T-1A
563	09	TS2930	IL 62 (Algonquin Rd)	Arbor Dr	Cook	T-1A
564	10	TS2935	IL 62 (Algonquin Rd)	Arlington Heights Rd	Cook	T-1A
565	04	TS2936	IL 62 (Algonquin Rd)	95 West Radisson Marriot Hotel	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
				Entrance		
566	10	TS2938	Arlington Heights Rd	I-90 Tollway N Ramps	Cook	T-1A
567	10	TS2939	Arlington Heights Rd	I-90 Tollway S Ramps	Cook	T-1A
568	09	TS2940	IL 62 (Algonquin Rd)	Barrington Rd	Cook	T-1A
569		TS2945	IL 62 (Algonquin Rd)	Busse Rd	Cook	T-1A
570	09	TS2950	IL 62 (Algonquin Rd)	Dempster St	Cook	T-1A
571	04	TS2955	IL 62 (Algonquin Rd)	Ela Rd	Cook	T-1A
572	04	TS2957	IL 62 (Algonquin Rd)	Winston Dr	Cook	T-1A
573	04	TS2960	IL 62 (Algonquin Rd)	Freeman Rd / Huntington Blvd	Cook	T-1A
574	04	TS2965	IL 62 (Algonquin Rd)	Goebbert Rd	Cook	T-1A
575		TS2966	IL 62 (Algonquin Rd)	Tonne Rd	Cook	T-1A
576		TS2967	IL 62 (Algonquin Rd)	Meijer Entrance	Cook	T-1A
577		TS2970	IL 62 (Algonquin Rd)	Harper College Entrance	Cook	T-1A
578	09	TS2975	IL 62 (Algonquin Rd)	Linneman Rd	Cook	T-1A
579		TS2980	IL 62 (Algonquin Rd)	Magnolia Dr / Commerce Rd	Cook	T-1A
580	09	TS2985	IL 62 (Algonquin Rd)	New Wilke Rd	Cook	T-1A
581		TS2990	IL 62 (Algonquin Rd)	Roselle Rd	Cook	T-1A
582	01	TS2995	IL 64 (North Ave)	IL 171 (1st Ave)	Cook	T-1A
583	01	TS3000	IL 64 (North Ave)	5th Ave	Cook	T-1A
584	01	TS3005	IL 64 (North Ave)	7th Ave	Cook	T-1A
585	01	TS3010	IL 64 (North Ave)	9th Ave	Cook	T-1A
586		TS3015	IL 64 (North Ave)	19th Ave / Broadway Ave	Cook	T-1A
587	01	TS3020	IL 64 (North Ave)	25th Ave	Cook	T-1A
588	01	TS3025	IL 64 (North Ave)	76th Ave / Lathrop Ave	Cook	T-1A
589		TS3030	IL 64 (North Ave)	Austin Blvd	Cook	T-1A
590	01	TS3035	IL 64 (North Ave)	Cornell Ave / 35th St	Cook	T-1A
591	01	TS3040	IL 64 (North Ave)	George St	Cook	T-1A
592	02	TS3045	IL 64 (North Ave)	Hawthorne Ave	Cook	T-1A
593	01	TS3050	IL 64 (North Ave)	Indian Boundary Rd / Ruby Rd	Cook	T-1A
594	02	TS3055	IL 64 (North Ave)	Narragansett Ave / Edmer Ave	Cook	T-1A
595	01	TS3060	IL 64 (North Ave)	Natoma Ave / Columbian Ave	Cook	T-1A
596	01	TS3065	IL 64 (North Ave)	Northwest Ave	Cook	T-1A
597		TS3067	US 20 (Lake St)	Railroad Ave	Cook	T-1A
598		TS3070	IL 64 (North Ave)	Oak Park Ave	Cook	T-1A
599	01	TS3075	IL 64 (North Ave)	Railroad Ave	Cook	T-1A
600	02	TS3080	IL 64 (North Ave)	Ridgeland Ave / Mobile Ave	Cook	T-1A
601	01	TS3083	IL 64 (North Ave)	Roy St	Cook	T-1A
602	01	TS3085	IL 64 (North Ave)	Thatcher Ave	Cook	T-1A
603	01	TS3090	IL 64 (North Ave)	Wolf Rd	Cook	T-1A
604	07	TS3095	IL 68 (Dundee Rd)	IL 83 (Elmhurst Rd)	Cook	T-1A
605	07	TS3100	IL 68 (Dundee Rd)	Arlington Heights Rd	Cook	T-1A
606	07	TS3105	IL 68 (Dundee Rd)	Barrington Rd	Cook	T-1A
607	07	TS3110	IL 68 (Dundee Rd)	Buffalo Grove Rd	Cook	T-1A
608	04	TS3112	IL 68 (Dundee Rd)	Buffalo Grove High School Entrance	Cook	T-1A
609	04	TS3115	IL 68 (Dundee Rd)	Charlemagne Dr / Torrey Pines Parkway	Cook	T-1A
610	07	TS3120	IL 68 (Dundee Rd)	Hicks Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
611	04	TS3122	IL 68 (Dundee Rd)	Denise Dr / Deergrove SC Entrance	Cook	T-1A
612	07	TS3125	IL 68 (Dundee Rd)	Huehl Rd	Cook	T-1A
613	04	TS3130	IL 68 (Dundee Rd)	Kennicott Ave	Cook	T-1A
614	07	TS3135	IL 68 (Dundee Rd)	Landwehr Rd	Cook	T-1A
615	07	TS3137	IL 68 (Dundee Rd)	Anthony Tr	Cook	T-1A
616	07	TS3140	IL 68 (Dundee Rd)	Midway Rd	Cook	T-1A
617	07	TS3145	IL 68 (Dundee Rd)	Old McHenry Rd / Wheeling Rd	Cook	T-1A
618	04	TS3150	IL 68 (Dundee Rd)	Ridge Ave	Cook	T-1A
619	07	TS3155	IL 68 (Dundee Rd)	Golfview Terrace	Cook	T-1A
620	07	TS3160	IL 68 (Dundee Rd)	Pfingsten Rd	Cook	T-1A
621	04	TS3165	IL 68 (Dundee Rd)	Quentin Rd	Cook	T-1A
622		TS3168	IL 68 (Dundee Rd)	Sterling Ave	Cook	T-1A
623	07	TS3170	IL 68 (Dundee Rd)	Sanders Rd	Cook	T-1A
624	07	TS3175	IL 68 (Dundee Rd)	Schoenbeck Rd	Cook	T-1A
625	07	TS3180	IL 68 (Dundee Rd)	Shermer Rd	Cook	T-1A
626	07	TS3185	IL 68 (Dundee Rd)	Skokie Rd	Cook	T-1A
627	07	TS3190	IL 68 (Dundee Rd)	Smith Rd	Cook	T-1A
628	04	TS3195	IL 68 (Dundee Rd)	Western Ave	Cook	T-1A
629	07	TS3200	IL 68 (Dundee Rd)	Wolf Rd	Cook	T-1A
630	07	TS3205	IL 68 (Dundee Rd)	Wilke Rd / E Frontage Rd	Cook	T-1A
631	04	TS3210	IL 68 (Dundee Rd)	Weidner Rd / Crofton Ln	Cook	T-1A
632	04	TS3213	IL 68 (Dundee Rd)	Buffalo Grove Fire House	Cook	T-1A
633	10	TS3215	IL 72 (Higgins Rd)	Landmeier Rd	Cook	T-1A
634	09	TS3220	IL 72 (Higgins Rd)	Mall Dr	Cook	T-1A
635	09	TS3225	IL 72 (Higgins Rd)	Martingale Rd	Cook	T-1A
636	09	TS3230	IL 72 (Higgins Rd)	Meacham Rd	Cook	T-1A
637	10	TS3235	IL 72 (Higgins Rd)	Mt Prospect Rd	Cook	T-1A
638	10	TS3240	IL 72 (Higgins Rd)	Oakton St W Junction	Cook	T-1A
639	09	TS3245	IL 72 (Higgins Rd)	Plum Grove Rd	Cook	T-1A
640	10	TS3250	IL 72 Higgins Rd	Roselle Rd	Cook	T-1A
641	10	TS3251	IL 72 (Higgins Rd)	Ash Rd	Cook	T-1A
642	09	TS3255	IL 72 (Higgins Rd)	Salem Dr	Cook	T-1A
643	09	TS3260	IL 72 (Touhy Ave)	Wolf Rd	Cook	T-1A
644	10	TS3265	IL 72 (Higgins Rd)	O'Hare Plaza Entrance # 2	Cook	T-1A
645	09	TS3270	IL 72 (Higgins Rd)	IL 72 (Touhy Ave)	Cook	T-1A
646		TS3275	IL 72 (Higgins Rd)	Oakton St E Junction	Cook	T-1A
647		TS3280	IL 83 (Busse Rd)	Oakton St	Cook	T-1A
648	10	TS3285	IL 72 (Higgins Rd)	Arlington Heights Rd	Cook	T-1A
649	09	TS3290	IL 72 (Higgins Rd)	Barrington Rd	Cook	T-1A
650	04	TS3295	IL 72 (Higgins Rd)	Bartlett Rd	Cook	T-1A
651		TS3297	IL 72 (Higgins Rd)	Arboretum Dr	Cook	T-1A
652	09	TS3300	IL 72 (Higgins Rd)	Canfield Rd	Cook	T-1A
653	09	TS3305	IL 72 (Higgins Rd)	IL 171 (Cumberland Ave)	Cook	T-1A
654	09	TS3310	IL 72 (Higgins Rd)	Dee Rd / East River Rd	Cook	T-1A
655	10	TS3315	IL 72 (Higgins Rd)	Elmhurst Rd	Cook	T-1A
656	10	TS3318	Elmhurst Rd	Landmeier Rd	Cook	T-1A
657	09	TS3325	IL 72 (Higgins Rd)	Gannon Dr	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
658	04	TS3330	IL 72 (Higgins Rd)	Governors Ln / Moon Lake Blvd	Cook	T-1A
659		TS3335	IL 72 (Higgins Rd)	King Rd / Stanley St	Cook	T-1A
660	09	TS3340	IL 72 (Higgins Rd)	Beverly Rd	Cook	T-1A
661	04	TS3345	IL 83 (Torrence Ave)	IL 83 (Glenwood Dyer Rd)	Cook	T-1A
662	02	TS3350	IL 83 (Elmhurst Rd)	IL 83 (Oakton St)	Cook	T-1A
663		TS3355	IL 83 (Elmhurst Rd)	IL 83 (Old McHenry Rd)	Cook	T-1A
664		TS3360	IL 83 Cal Sag Rd	104 th Ave	Cook	T-1A
665		TS3365	IL 83/IL 171 N Junction	107th St	Cook	T-1A
666		TS3370	IL 83/IL 171 S Junction	111th St	Cook	T-1A
667	09	TS3375	IL 83 (Cal Sag Rd)	127th St	Cook	T-1A
668	03	TS3380	IL 83 (Torrence Ave)	186th St	Cook	T-1A
669	03	TS3385	IL 83/147th St/SibleyBlvd	Broadway Ave	Cook	T-1A
670	04	TS3390	IL 83 (Elmhurst Rd)	Camp McDonald Rd	Cook	T-1A
671		TS3395	IL 83 Sibley 147 th St	Chicago Rd	Cook	T-1A
672	04	TS3400	IL 83/147th St/SibleyBlvd	Crawford Ave	Cook	T-1A
673	09	TS3405	IL 83 (Elmhurst Rd)	Dempster St / Thacker St	Cook	T-1A
674		TS3410	IL 83 (Busse Rd)	Devon Ave	Cook	T-1A
675		TS3415	IL 83 Sibley 147 th St	Dixie Hwy	Cook	T-1A
676		TS3420	IL 83 (Elmhurst Rd)	Euclid St	Cook	T-1A
677	10	TS3425	IL 83 (Busse Rd)	Greenleaf Ave	Cook	T-1A
678	04	TS3430	IL 83 (Elmhurst Rd)	Hintz Rd	Cook	T-1A
679		TS3435	IL 83 Sibley 147 th St	Homan Ave	Cook	T-1A
680	10	TS3440	IL 83/147th St/SibleyBlvd	Indiana Ave	Cook	T-1A
681	03	TS3445	IL 83/147th St/SibleyBlvd	Keeler Ave	Cook	T-1A
682		TS3450	IL 83 Sibley 147 th St	Kedzie Ave	Cook	T-1A
683	03	TS3455	IL 83/147th St/SibleyBlvd	Kilbourn Ave	Cook	T-1A
684		TS3460	IL 83 (Busse Rd)	Landmeier Rd	Cook	T-1A
685		TS3465	IL 83 Sibley 147 th St	LaSalle Markham	Cook	T-1A
686	03	TS3470	IL 83/147th St/SibleyBlvd	Loomis St	Cook	T-1A
687	04	TS3475	IL 83/147th St/SibleyBlvd	Michigan City Rd / Lincoln Ave	Cook	T-1A
688		TS3480	IL 83 Torrence Ave	Michigan City Rd	Cook	T-1A
689		TS3485	IL 83 (Elmhurst Rd)	Palatine Rd	Cook	T-1A
690	10	TS3490	IL 83 (Busse Rd)	Pratt Rd	Cook	T-1A
691	09	TS3495	IL 83 (Torrence Ave)	Ridge Rd / 179th St	Cook	T-1A
692	04	TS3500	IL 83 (Elmhurst Rd)	Randhurst Shopping Center Entrance	Cook	T-1A
693	04	TS3505	IL 83 (Cal Sag Rd)	Ridgeland Ave	Cook	T-1A
694	03	TS3510	IL 83/147th St/SibleyBlvd	Robey Ave	Cook	T-1A
695	03	TS3515	IL 83 (Torrence Ave)	Thornton Lansing Rd	Cook	T-1A
696	03	TS3520	IL 83/147th St/SibleyBlvd	Wood St	Cook	T-1A
697		TS3530	IL 83 (Cal Sag Rd / College Dr)	119th St	Cook	T-1A
698	09	TS3532	IL 83 (Cal Sag Rd / College Dr)	76th Ave	Cook	T-1A
699		TS3535	IL 83 (Elmhurst Rd)	Huntington Commons Dr	Cook	T-1A
700	04	TS3540	IL 83 (Elmhurst Rd)	Willow Rd	Cook	T-1A
701	03	TS3545	IL 171 (Archer Ave)	63rd St	Cook	T-1A
702	09	TS3550	IL 171 (1st Ave) E Ramps	Joliet Rd	Cook	T-1A
703		TS3555	IL 171 (Archer Ave)	55th St	Cook	T-1A
704	03	TS3557	IL 171 (Archer Ave)	59th St	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
705	03	TS3560	IL 171 (Archer Ave)	Roberts Rd	Cook	T-1A
706		TS3565	IL 171 (Archer Ave)	State St	Cook	T-1A
707		TS3567	IL 171 (Archer Ave)	Access Dr / Target Entrance	Cook	T-1A
708	03	TS3570	IL 171 (Archer Ave)	Willow Springs Rd	Cook	T-1A
709		TS3572	IL 171 (Archer Ave)	Nolton Ave	Cook	T-1A
710	03	TS3573	Willow Springs Rd	German Church Rd	Cook	T-1A
711	03/09	TS3575	IL 171 (1st Ave) E Ramps	47th St	Cook	T-1A
712	06	TS3580	IL 394	Steger Rd	Cook	T-1A
713	01	TS3585	IL 171 (1st Ave)	26th St	Cook	T-1A
714	01	TS3590	IL 171 (1st Ave)	31st St	Cook	T-1A
715	03/09	TS3595	IL 171 (1st Ave)	31st St / Cutoff Golf View Rd	Cook	T-1A
716	01	TS3600	IL 171 (1st Ave)	22nd St / Cermak Rd	Cook	T-1A
717	01	TS3605	IL 171 (1st Ave)	22nd St / Cermak Rd Cutoff	Cook	T-1A
718	01	TS3610	IL 171 (1st Ave)	Chicago Ave	Cook	T-1A
719	09	TS3615	IL 171 (1st Ave)	Des Plaines River Rd	Cook	T-1A
720	01	TS3620	IL 171 (1st Ave)	Forest Ave / Ridgewood Ave	Cook	T-1A
721	02	TS3625	IL 171 (1st Ave)	Fullerton Ave	Cook	T-1A
722	02	TS3630	IL 171 (1st Ave)	Lake St	Cook	T-1A
723	01	TS3635	IL 171 (1st Ave)	13th St / Madden Medical Center Entrance	Cook	T-1A
724	01	TS3640	IL 171 (1st Ave)	Madison St	Cook	T-1A
725	02	TS3645	IL 171 (1st Ave)	Maybrook Square Entrance	Cook	T-1A
726	01	TS3650	IL 171 (1st Ave)	Roosevelt Rd	Cook	T-1A
727		TS3656	IL 171 (1st Ave)	Warren Ave	Cook	T-1A
728	03	TS3660	IL 171 (1st Ave)	Thatcher Rd Cutoff	Cook	T-1A
729	03	TS3665	IL 171 (1st Ave)	Van Buren St / Comm Edison Entrance	Cook	T-1A
730		TS3670	IL 171 (1st Ave)	Washington Blvd	Cook	T-1A
731	01	TS3675	IL 171 (1st Ave)	G St / Loyola Hospital Entrance	Cook	T-1A
732	01	TS3680	5th Ave	Des Plaines River Rd	Cook	T-1A
733	01	TS3685	5th Ave	Triton College N Entrance	Cook	T-1A
734	01	TS3690	5th Ave	Triton College S Entrance	Cook	T-1A
735	09	TS3691	31st St	Prairie Ave	Cook	T-1A
736		TS3693	30th St	Maple Ave	Cook	T-1A
737		TS3695	17th Ave / Maple Ave	31st St / Logan Blvd	Cook	T-1A
738	01	TS3700	22nd St / Cermak Rd	17th Ave	Cook	T-1A
739	01	TS3701	22nd St / Cermak Rd	12th Ave	Cook	T-1A
740	01	TS3705	Roosevelt Rd	17th Ave	Cook	T-1A
741	03	TS3715	25th Ave	Lake St	Cook	T-1A
742	03	TS3720	25th Ave	Lexington Dr	Cook	T-1A
743	01	TS3725	Roosevelt Rd	25th Ave	Cook	T-1A
744	03	TS3735	26th St	Des Plaines Ave	Cook	T-1A
745	03	TS3740	26th St	East End Ave	Cook	T-1A
746	03	TS3745	26th St	Highland Blvd	Cook	T-1A
747	03	TS3750	26th St	North Riverside Plaza Entrance	Cook	T-1A
748	03	TS3755	26th St	Ridgeland Ave	Cook	T-1A
749	09	TS3760	31st St	Des Plaines Ave	Cook	T-1A
750	03	TS3765	31st St	Golfview Ln / 1st Ave Cutoff	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
751	03	TS3770	31st St	Kemman Ave / Grand Blvd	Cook	T-1A
752		TS3775	31st St	Wolf Rd	Cook	T-1A
753	03	TS3780	39th St / Pershing Rd	Central Ave	Cook	T-1A
754	03	TS3785	39th St / Pershing Rd	Laramie Ave	Cook	T-1A
755	03	TS3790	39th St / Pershing Rd	Oak Park Ave	Cook	T-1A
756	03	TS3795	39th St / Pershing Rd	Ridgeland Ave	Cook	T-1A
757	03	TS3800	39th St / Pershing Rd	Austin Blvd	Cook	T-1A
758	01	TS3805	Central Ave	47th St	Cook	T-1A
759	03	TS3810	47th St	Joliet Rd	Cook	T-1A
760	03	TS3815	47th St	Lawndale Ave	Cook	T-1A
761	03	TS3820	47th St	Plainfield Rd	Cook	T-1A
762		TS3825	47th St	Wolf Rd	Cook	T-1A
763	01	TS3830	55th St	Brainard Ave	Cook	T-1A
764	03	TS3835	IL 171 (Archer Ave)	Center Ave / Lawndale Ave	Cook	T-1A
765	03	TS3840	55th St	County Line Rd	Cook	T-1A
766	03	TS3845	55th St	East Ave	Cook	T-1A
767	09	TS3850	55th St	Joliet Rd	Cook	T-1A
768	03	TS3855	55th St	Plainfield Rd	Cook	T-1A
769	01/03	TS3860	55th St	Willow Springs Rd	Cook	T-1A
770	01	TS3865	55th St	Wolf Rd	Cook	T-1A
771	01	TS3870	55th St	Laurel Ave	Cook	T-1A
772	03	TS3875	79th St	Austin Blvd	Cook	T-1A
773	03	TS3880	79th St	Central Ave	Cook	T-1A
774		TS3885	79th St	Narragansett Ave	Cook	T-1A
775	03	TS3890	79th St	Roberts Rd	Cook	T-1A
776	03	TS3893	79th St	Willow Springs Rd	Cook	T-1A
777	03	TS3895	79th St	Sayre Ave	Cook	T-1A
778	03	TS3900	79th St	State Rd	Cook	T-1A
779		TS3910	87th St	Kedzie Ave	Cook	T-1A
780		TS3915	87th St	Kostner Ave	Cook	T-1A
781		TS3920	Crawford Ave / Pulaski Rd	Southwest Highway / Columbus	Cook	T-1A
782	02	TS3925	103rd St	Crawford Ave / Pulaski Rd	Cook	T-1A
783	09	TS3930	103rd St	Kedzie Ave	Cook	T-1A
784	09	TS3935	103 rd St/Virginia Ave	Southwest Hwy	Cook	T-1A
785	02	TS3936	123rd St	Crawford Ave / Pulaski Rd	Cook	T-1A
786	01	TS3940	111th St	86th Ave	Cook	T-1A
787		TS3942	111 th St	Possum Dr College Pkwy	Cook	T-1A
788	04	TS3945	111th St	Central Ave	Cook	T-1A
789	04	TS3950	111th St	Ridgeland Ave	Cook	T-1A
790	03	TS3955	111th St	Roberts Rd	Cook	T-1A
791	02	TS3960	115th St	Crawford Ave / Pulaski Rd	Cook	T-1A
792	09	TS3965	115th St	Kedzie Ave	Cook	T-1A
793	09	TS3970	119th St	Vincennes Ave	Cook	T-1A
794	03	TS3975	127th St	76th Ave	Cook	T-1A
795	03	TS3980	127th St	Ashland Ave	Cook	T-1A
796	03	TS3985	127th St	Central Ave	Cook	T-1A
797	02	TS3990	127th St	Crawford Ave / Pulaski Rd	Cook	T-1A
798	04	TS3995	127th St	Kedzie Ave	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
799	03	TS4000	127th St	Ridgeland Ave	Cook	T-1A
800	03	TS4005	127th St	Throop St	Cook	T-1A
801	03	TS4010	127th St	Wood St	Cook	T-1A
802	03	TS4015	127th St	Bishop St	Cook	T-1A
803	03	TS4030	135th St	Long Ave	Cook	T-1A
804	03	TS4035	135th St	Ridgeland Ave	Cook	T-1A
805	03	TS4045	138th St	Ashland Ave / Wood St	Cook	T-1A
806	03	TS4050	142nd St / Main St	Chicago Ave	Cook	T-1A
807	03	TS4055	142nd St / Main St	Indiana Ave	Cook	T-1A
808	03	TS4060	142nd St / Main St	Lincoln Ave	Cook	T-1A
809	03	TS4075	147th St	Central Ave	Cook	T-1A
810	03	TS4076	147th St	Ridgeland Ave	Cook	T-1A
811	03	TS4080	154th St	Chicago Ave / South Park Ave	Cook	T-1A
812	03	TS4085	167th St	Wood St	Cook	T-1A
813		TS4090	Governors Highway / 175th St	Dixie Highway	Cook	T-1A
814		TS4092	Governors Highway	Metra RR Station Entrance	Cook	T-1A
815	03	TS4095	183rd St	Crawford Ave / Pulaski Rd	Cook	T-1A
816	03	TS4108	183rd St	Ridgeland Ave	Cook	T-1A
817	09	TS4110	183rd St	Riegal Rd	Cook	T-1A
818	02	TS4115	IL 171 (Cumberland Ave)	Addison St	Cook	T-1A
819	10	TS4120	Algonquin Rd	Mt Prospect Rd	Cook	T-1A
820	10	TS4125	Algonquin Rd	Oakton St	Cook	T-1A
821		TS4130	Algonquin Rd	Wolf Rd	Cook	T-1A
822		TS4135	Ashland Ave	Broadway Ave at North Water St	Cook	T-1A
823	09	TS4140	Ashland Ave	Vermont Ave	Cook	T-1A
824	10	TS4145	Ballard Rd	Dee Rd	Cook	T-1A
825	10	TS4146	Ballard Rd	Nesset Dr	Cook	T-1A
826	10	TS4150	Ballard Rd	Greenwood Rd	Cook	T-1A
827		TS4155	Ballard Rd	Potter	Cook	T-1A
828	10	TS4160	Ballard Rd	US12 (Rand Rd)	Cook	T-1A
829	01	TS4165	Barrington Rd	Bourbon Parkway	Cook	T-1A
830	04	TS4170	Barrington Rd	Bode Rd	Cook	T-1A
831	09	TS4175	Barrington Rd	Hassel Rd	Cook	T-1A
832	09	TS4176	Barrington Rd	Central Rd	Cook	T-1A
833	01	TS4180	Barrington Rd	Schaumburg Rd	Cook	T-1A
834		TS4185	Barrington Rd	Mundhank Rd	Cook	T-1A
835	04	TS4188	Barrington Rd	Locust Dr / Lakewood Blvd	Cook	T-1A
836	09	TS4190	Belmont Ave	80th Ave / Pacific Ave	Cook	T-1A
837	01	TS4200	IL 171 (Cumberland Ave)	Belmont Ave	Cook	T-1A
838	01	TS4203	IL 171 (Cumberland Ave)	Thatcher Woods SC Entrance	Cook	T-1A
839		TS4204	Belmont Ave	Plainfield Ave	Cook	T-1A
840		TS4205	Belmont Ave	Des Plaines River Rd	Cook	T-1A
841		TS4210	Belmont Ave	Forest Preserve Dr	Cook	T-1A
842	09	TS4215	Belmont Ave	77th Ave / Overhill Ave	Cook	T-1A
843	03	TS4220	Belmont Ave	Burnham Ave	Cook	T-1A
844	03	TS4225	Broadway Ave	Joe Orr Rd / Riegel Rd	Cook	T-1A
845	04	TS4230	Burnham Ave	170th St	Cook	T-1A
846	03	TS4235	Burnham Ave	Ridge Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
847	04	TS4240	Burnham Ave	Schrum Pl	Cook	T-1A
848	04	TS4245	Busse Highway	Potter Rd	Cook	T-1A
849	04	TS4250	Busse Rd	Dempster St	Cook	T-1A
850	09	TS4255	Canfield Ave	Devon Ave	Cook	T-1A
851		TS4260	Canfield Ave	Talcott Ave	Cook	T-1A
852	02	TS4270	111th St	Crawford Ave / Pulaski Rd	Cook	T-1A
853	04/09	TS4280	IL 43 (Harlem Ave)	143rd St	Cook	T-1A
854		TS4285	IL 43 (Harlem Ave)	Foster Shopping Center Entrance	Cook	T-1A
855	03	TS4375	Joe Orr Rd	Ashland Ave	Cook	T-1A
856	03	TS4410	Burnham Ave	152nd St	Cook	T-1A
857	03	TS4415	Burnham Ave	156th St	Cook	T-1A
858	03	TS4425	Burnham Ave	Michigan City Rd	Cook	T-1A
859	03	TS4430	Burnham Ave	154th St / Pulaski Rd	Cook	T-1A
860	04	TS4435	Sibley Blvd / 147th St	Burnham Ave	Cook	T-1A
861	01	TS4660	IL 59 (Sutton Rd)	West Bartlett Rd	Cook	T-1A
862	05	TS4670	IL 59	Stearns Rd	Cook	T-1A
863		TS4695	US 14 (Northwest Highway)	Eastern Ave	Cook	T-1A
864	02	TS4715	IL 43 (Harlem Ave)	48th St / Amoco Oil Ent	Cook	T-1A
865		TS4725	IL 50 Cicero Ave	37 th St Citco Oil Ent	Cook	T-1A
866	01	TS4735	Central Ave	51st St	Cook	T-1A
867	02	TS4740	Central Rd	Dee Rd	Cook	T-1A
868	02	TS4742	Central Rd	Dearlove Rd / Glenview Rd	Cook	T-1A
869	02	TS4745	Central Rd	Greenwood Rd	Cook	T-1A
870	04	TS4755	Central Ave / Carpenter Rd	Pratt Ave	Cook	T-1A
871	03	TS4760	Central Ave	Roosevelt Rd	Cook	T-1A
872	10	TS4765	Central Rd	Wolf Rd	Cook	T-1A
873	01	TS4775	22nd St / Cermak Rd	57th St	Cook	T-1A
874	01	TS4780	22nd St / Cermak Rd	58th St	Cook	T-1A
875	01	TS4785	22nd St / Cermak Rd	Austin Blvd	Cook	T-1A
876	01	TS4790	22nd St / Cermak Rd	Central Ave	Cook	T-1A
877	01	TS4795	22nd St / Cermak Rd	Cermak Plaza North Entrance	Cook	T-1A
878	01	TS4800	22nd St / Cermak Rd	Des Plaines River Rd	Cook	T-1A
879	01	TS4805	22nd St / Cermak Rd	East Rd	Cook	T-1A
880	01	TS4810	22nd St / Cermak Rd	Home Ave	Cook	T-1A
881	01	TS4815	22nd St / Cermak Rd	Lombard Ave	Cook	T-1A
882	01	TS4820	22nd St / Cermak Rd	North Riverside Plaza W Entrance	Cook	T-1A
883	01	TS4825	22nd St / Cermak Rd	North Riverside Plaza E Entrance	Cook	T-1A
884	01	TS4830	22nd St / Cermak Rd	Oak Park Ave	Cook	T-1A
885	01	TS4835	22nd St / Cermak Rd	Ridgeland Ave	Cook	T-1A
886	01	TS4840	22nd St / Cermak Rd	Riverside Dr / Wesley Ave	Cook	T-1A
887	01	TS4845	22nd St / Cermak Rd	Wolf Rd	Cook	T-1A
888	01	TS4850	22nd St / Cermak Rd	Westbrook Corporate Center Entrance	Cook	T-1A
889	02	TS4851	22nd St / Cermak Rd	Enterprise Dr	Cook	T-1A
890	04	TS4855	Chicago Rd / South Park Ave	Indianwood Dr	Cook	T-1A
891		TS4870	Church St	Niles Center Rd	Cook	T-1A
892		TS4875	McCormick Blvd	Church St	Cook	T-1A
893	02	TS4885	Crawford Ave / Pulaski Rd	99th St	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
894	02	TS4890	Crawford Ave / Pulaski Rd	119th St	Cook	T-1A
895	10	TS4892	Crawford Ave / Pulaski Rd	120th St / Jewel Entrance / Aldi Entrance	Cook	T-1A
896	03	TS4900	Crawford Ave / Pulaski Rd	167th St	Cook	T-1A
897	03	TS4905	Crawford Ave / Pulaski Rd	175th St	Cook	T-1A
898		TS4907	Crawford Ave / Pulaski Rd	178th St / Cambridge Dr	Cook	T-1A
899	10	TS4910	Crawford Ave / Pulaski Rd	Devon Ave	Cook	T-1A
900	10	TS4915	Crawford Ave / Pulaski Rd	Golf Rd	Cook	T-1A
901	04	TS4920	Crawford Ave / Pulaski Rd	Harrison St / Old Orchard Rd	Cook	T-1A
902	03	TS4930	Crawford Ave / Pulaski Rd	Vollmer Rd	Cook	T-1A
903		TS4935	Crawford Ave / Pulaski Rd	Flossmoor Rd	Cook	T-1A
904	04	TS4940	87th St	California Ave	Cook	T-1A
905	03	TS4945	Crawford Ave / Pulaski Rd	Governors Highway	Cook	T-1A
906	10	TS4950	Crawford Ave / Hunter Rd	Wilmette Ave / Glenview Rd	Cook	T-1A
907	02	TS4955	Devon Ave	IL 171 (Cumberland Ave)	Cook	T-1A
908	01	TS4960	IL 171 (Cumberland Ave)	Forest Preserve Dr	Cook	T-1A
909	01	TS4965	IL 171 (Cumberland Ave)	Lawrence Ave	Cook	T-1A
910	02	TS4970	IL 171 (Cumberland Ave)	Montrose Ave / East River Rd	Cook	T-1A
911	10	TS4975	Des Plaines River Rd	Algonquin Rd	Cook	T-1A
912	09	TS4985	Des Plaines River Rd	Grand Ave	Cook	T-1A
913	01	TS4990	Des Plaines River Rd	Lawrence Ave	Cook	T-1A
914	10	TS4995	Oakton St	Des Plaines River Rd	Cook	T-1A
915	01	TS5000	Roosevelt Rd	Des Plaines Ave	Cook	T-1A
916	09/10	TS5005	Des Plaines River Rd	Touhy Ave	Cook	T-1A
917	01	TS5010	Des Plaines River Rd	Fullerton Ave	Cook	T-1A
918	10	TS5015	Dempster St	Crawford Ave / Pulaski Rd	Cook	T-1A
919		TS5017	Dempster St	Hamlin Ave	Cook	T-1A
920	09	TS5020	Dempster St	East Prairie Ave	Cook	T-1A
921	04	TS5025	Dempster St	St Louis Ave / Lincolnwood Dr	Cook	T-1A
922		TS5030	Dempster St	Keeler Ave	Cook	T-1A
923		TS5035	McCormick Rd	Dempster St	Cook	T-1A
924		TS5040	Devon Ave	Dee Rd	Cook	T-1A
925		TS5045	Devon Ave	McCormick Blvd	Cook	T-1A
926		TS5047	US 41(Lincoln Ave)	Fire Station Exit	Cook	T-1A
927	09	TS5050	Dixie Highway / Roby St	167th St / 170th St	Cook	T-1A
928	03	TS5055	Dixie Highway	Holbrook Rd	Cook	T-1A
929	03	TS5060	Dixie Highway	Joe Orr Rd	Cook	T-1A
930	01	TS5065	Joliet Rd	East Ave	Cook	T-1A
931	01	TS5066	Joliet Rd	Quarry Mall Entrance	Cook	T-1A
932		TS5067	Joliet Rd	Circuit City Entrance / Quarry Mall Ent	Cook	T-1A
933	09	TS5070	Plainfield Rd	East Ave	Cook	T-1A
934	09	TS5075	East End Ave	Sauk Trail Rd	Cook	T-1A
935	10	TS5080	Elmhurst Rd / York Rd	Devon Ave	Cook	T-1A
936	04	TS5090	Euclid Ave	Wolf Rd	Cook	T-1A
937	01	TS5095	Forest Preserve Dr	Montrose Ave	Cook	T-1A
938	01	TS5100	Forest Preserve Dr	Oak Park Ave	Cook	T-1A
939	09	TS5105	Flossmoor Rd	Western Ave	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
940	09	TS5110	Franklin Ave	Wolf Rd	Cook	T-1A
941	09	TS5115	Fullerton Ave	Thatcher Rd	Cook	T-1A
942	04	TS5120	Kensington Rd / Foundry Rd	Wolf Rd	Cook	T-1A
943	03	TS5125	Glenwood Dyer Rd	Cottage Grove Rd	Cook	T-1A
944	03	TS5130	Glenwood Dyer Rd	Main St / Glenwood Lansing Rd	Cook	T-1A
945	10	TS5135	Glenview Rd	Greenwood Rd	Cook	T-1A
946	04	TS5140	Golf Rd	Central Park Ave	Cook	T-1A
947	10	TS5145	Golf Rd	East Prairie	Cook	T-1A
948		TS5150	Golf Rd	Gross Point Rd	Cook	T-1A
949		TS5152	Gross Point Rd	Kenton Ave	Cook	T-1A
950	10	TS5155	Golf Rd	Harms Rd	Cook	T-1A
951		TS5157	Golf Rd	Woods Dr	Cook	T-1A
952	02	TS5160	Golf Rd	Lavergne Ave	Cook	T-1A
953	02	TS5165	Golf Rd	Lawler Ave	Cook	T-1A
954	10	TS5170	Golf Rd	McCormick Blvd	Cook	T-1A
955	04	TS5175	Golf Rd	Glenview Country Club Ent	Cook	T-1A
956	03	TS5180	Governors Highway	Flossmoor Rd	Cook	T-1A
957	04	TS5185	Governors Highway	Kedzie Ave	Cook	T-1A
958	09	TS5195	Governors Highway	Poplar Ave	Cook	T-1A
959	03	TS5200	Governors Highway	Vollmer Rd	Cook	T-1A
960	10	TS5205	Grand Ave	Oak St / Struckman Ave	Cook	T-1A
961		TS5210	Grand Ave	Mt Prospect Rd / County Line Rd	Cook	T-1A
962		TS5211	Grand Ave	Northwest Ave	Cook	T-1A
963	02	TS5215	IL 171 (Thatcher Rd)	Grand Ave	Cook	T-1A
964	09	TS5220	Grand Ave	Wolf Rd	Cook	T-1A
965		TS5235	Greenwood Rd	Lake Ave	Cook	T-1A
966	10	TS5240	Gross Point Rd	Church St	Cook	T-1A
967	10	TS5245	Gross Point Rd	Harrison St / Old Orchard Rd	Cook	T-1A
968	10	TS5250	Gross Point Rd	Laramie Ave / Carol Ave	Cook	T-1A
969		TS5255	Gross Point Rd	Oakton St / Central Ave	Cook	T-1A
970	10	TS5260	Touhy Ave	Gross Point Rd	Cook	T-1A
971	10	TS5270	Gunnison St	Nagle Ave	Cook	T-1A
972	10	TS5275	Gunnison St	Oak Park Ave	Cook	T-1A
973		TS5285	Harts Rd Gross Pt Rd	Milwaukee Ave	Cook	T-1A
974	04	TS5295	Hicks Rd	Cunningham Dr	Cook	T-1A
975	04	TS5300	Hicks Rd	Euclid Ave	Cook	T-1A
976	04	TS5305	Hicks Rd	Illinois Ave / Industrial Ave	Cook	T-1A
977	04	TS5315	Hicks Rd	Carpenter Dr	Cook	T-1A
978	02	TS5320	Hibbard Rd	Lake Ave	Cook	T-1A
979		TS5325	US 41 (Lincoln Ave)	Howard St	Cook	T-1A
980	09	TS5330	Howard St	Gross Point Rd / Menards Ent	Cook	T-1A
981	10	TS5335	Howard St	Lehigh Ave	Cook	T-1A
982	10	TS5340	McCormick Blvd	Howard St	Cook	T-1A
983	03	TS5345	Indiana Ave	137th St	Cook	T-1A
984	09	TS5350	Indiana Ave	138th St	Cook	T-1A
985	02	TS5355	Joliet Rd	Brainard Ave	Cook	T-1A
986	03	TS5360	Joliet Rd	Lawndale Ave	Cook	T-1A
987	02	TS5365	Joliet Rd	Willow Springs Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
988	09	TS5370	Joliet Rd	Wolf Rd	Cook	T-1A
989	03/09	TS5375	Joliet Rd	Universal Oil Products Entrance	Cook	T-1A
990	03	TS5380	Kedzie Ave	119th St / Oakhill Cemetery Ent	Cook	T-1A
991	03	TS5385	Kedzie Ave	123rd St	Cook	T-1A
992	04	TS5390	Kensington Rd / Foundry Rd	Wheeling Rd	Cook	T-1A
993		TS5395	Kirchoff Rd	Wilke Rd	Cook	T-1A
994		TS5425	Lake Cook Rd	Quentin Rd	Cook	T-1A
995		TS5430	Lake Cook Rd	Sheridan Rd	Cook	T-1A
996	09	TS5435	Lawrence Ave	East River Rd / Dee Rd	Cook	T-1A
997	10	TS5440	Lawrence Ave	Forster Rd	Cook	T-1A
998	09	TS5445	Lee St	Touhy Ave	Cook	T-1A
999	04	TS5448	Oakton St	River Dr	Cook	T-1A
1000	10	TS5450	Lehigh Ave	Oakton St	Cook	T-1A
1001	10	TS5455	Lehigh Ave	Touhy Ave	Cook	T-1A
1002	03	TS5460	Madison St	Jackson Blvd	Cook	T-1A
1003	10	TS5465	McCormick Blvd	Main St	Cook	T-1A
1004	04	TS5475	McCormick Blvd	Pratt Ave	Cook	T-1A
1005	04	TS5477	McCormick Blvd	Northeast Parkway	Cook	T-1A
1006	10	TS5480	McCormick Blvd	Touhy Ave	Cook	T-1A
1007	10	TS5483	Touhy Ave	Kedzie Ave	Cook	T-1A
1008		TS5485	McCormick Blvd	Oakton St	Cook	T-1A
1009		TS5490	Milwaukee Ave	Touhy Ave	Cook	T-1A
1010		TS5495	IL 21 Milwaukee	IL 43 Waukegan Rd	Cook	T-1A
1011	01	TS5500	Montrose Ave	Narragansett Ave	Cook	T-1A
1012	10	TS5505	Northwest Hwy	Oakton St	Cook	T-1A
1013	10	TS5510	Northwest Hwy	Potter Rd	Cook	T-1A
1014	03	TS5515	Oak Park Ave	31st St	Cook	T-1A
1015	01	TS5520	US 34 (Ogden Ave)	Oak Park Ave	Cook	T-1A
1016	01	TS5525	Roosevelt Rd	Oak Park Ave	Cook	T-1A
1017	04	TS5535	Oakton St	Florence Dr	Cook	T-1A
1018	02	TS5540	Oakton St	Greenwood Rd	Cook	T-1A
1019	10	TS5545	Oakton St	Mt Prospect Rd	Cook	T-1A
1020	10	TS5550	Oakton St	Wolf Rd	Cook	T-1A
1021	01	TS5555	US 34 (Ogden Ave)	31st St	Cook	T-1A
1022		TS5556	US 34 (Ogden Ave)	25th Pl / 26th St	Cook	T-1A
1023		TS5557	IL 50 Cicero Ave	Connector Ogden	Cook	T-1A
1024		TS5558	US 34 (Ogden Ave)	Connector Ramp	Cook	T-1A
1025	02	TS5565	US 34 (Ogden Ave)	Austin Blvd	Cook	T-1A
1026	01	TS5570	US 34 (Ogden Ave)	Clarence Ave	Cook	T-1A
1027	01	TS5575	US 34 (Ogden Ave)	Clinton St	Cook	T-1A
1028	01	TS5580	US 34 (Ogden Ave)	East Ave	Cook	T-1A
1029	01	TS5590	US 34 (Ogden Ave)	Home Ave	Cook	T-1A
1030	02	TS5595	US 34 (Ogden Ave)	Ridgeland Ave / 34th St	Cook	T-1A
1031	04	TS5600	Old Plum Grove Rd	Meacham Rd	Cook	T-1A
1032	07	TS5605	Palatine Rd	Kennicott Dr	Cook	T-1A
1033	10	TS5610	Palatine Rd	Quentin Rd	Cook	T-1A
1034	07	TS5620	Palatine Rd	Schoenbeck Rd	Cook	T-1A
1035	07	TS5625	Palatine Rd	Wheeling Rd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1036	07	TS5630	Palatine Rd	Windsor Dr	Cook	T-1A
1037	10	TS5640	Palatine Rd	Wolf Rd	Cook	T-1A
1038		TS5645	Palatine Rd	Ela Rd	Cook	T-1A
1039		TS5650	171st St	Park Ave	Cook	T-1A
1040	10	TS5655	Willow Rd	Pfingsten Rd	Cook	T-1A
1041	09	TS5670	Colfax Ave	Quentin Rd	Cook	T-1A
1042	03	TS5675	Ridgeland Ave	96th St	Cook	T-1A
1043	03	TS5680	Ridgeland Ave	98th St	Cook	T-1A
1044		TS5690	Ridgeland Ave	Ridgeland Commons Shopping	Cook	T-1A
1045	09	TS5695	Ridge Rd	Ashland Ave / Riegel Ave	Cook	T-1A
1046	03	TS5710	Riegel Ave	Holbrook Rd	Cook	T-1A
1047	10	TS5715	IL 53 (Rohlwing Rd)	Devon Ave	Cook	T-1A
1048	01	TS5720	Roosevelt Rd	5th Ave	Cook	T-1A
1049	01	TS5725	Roosevelt Rd	9th Ave	Cook	T-1A
1050	01	TS5730	Roosevelt Rd	Austin Ave	Cook	T-1A
1051	01	TS5735	Roosevelt Rd	East Ave	Cook	T-1A
1052		TS5740	Roosevelt Rd	Laramie Ave	Cook	T-1A
1053	01	TS5745	Roosevelt Rd	Mayfield Ave	Cook	T-1A
1054	01	TS5750	Roosevelt Rd	Ridgeland Ave	Cook	T-1A
1055		TS5755	Sauk Trail Rd	State St	Cook	T-1A
1056	04	TS5760	Sauk Trail Rd	Torrence Ave	Cook	T-1A
1057	10	TS5770	Willow Rd	Shermer Rd	Cook	T-1A
1058	09	TS5780	State Rd	Central Ave / 80th St	Cook	T-1A
1059	04	TS5785	State St	Illinois St	Cook	T-1A
1060	04	TS5790	State St	Steger Rd	Cook	T-1A
1061		TS5795	St Charles Rd	Taft Ave	Cook	T-1A
1062		TS5800	St Charles Rd	Wolf Rd	Cook	T-1A
1063	09	TS5810	Talcott Ave	Dee Rd	Cook	T-1A
1064	09	TS5815	Talcott Ave	Touhy Ave	Cook	T-1A
1065	04	TS5820	IL 83 (Torrence Ave)	Dolton Rd / State St / 146th St	Cook	T-1A
1066	09	TS5825	Touhy Ave	Crawford Ave	Cook	T-1A
1067	09	TS5830	Touhy Ave	Dee Rd	Cook	T-1A
1068	10	TS5835	Touhy Ave	Kostner Ave	Cook	T-1A
1069	09	TS5840	Touhy Ave	Mobile Ave	Cook	T-1A
1070	09	TS5841	Touhy Ave	Meade Ave	Cook	T-1A
1071	09	TS5843	Touhy Ave	Melvina Ave	Cook	T-1A
1072	04	TS5845	Touhy Ave	Riverside Dr	Cook	T-1A
1073	09	TS5850	Washington Blvd / Randolph St	Lathrop Ave	Cook	T-1A
1074	03	TS5855	Western Ave	91st St	Cook	T-1A
1075	09	TS5860	Western Ave	98th St	Cook	T-1A
1076	03	TS5865	Western Ave	99th St	Cook	T-1A
1077	09	TS5870	Western Ave	119th St	Cook	T-1A
1078	03	TS5875	123rd St	Western Ave	Cook	T-1A
1079	03	TS5880	139th St	Western Ave	Cook	T-1A
1080	03	TS5885	Western Ave	Monee Rd	Cook	T-1A
1081	03	TS5890	Western Ave	Steger Rd	Cook	T-1A
1082	03	TS5895	Western Ave	Vollmer Rd	Cook	T-1A
1083	04/10	TS5900	Western Ave	Illinois St / 16th St	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1084	10	TS5915	Willow Rd	Greenwood Ave	Cook	T-1A
1085		TS5920	Willow Rd	Landwehr Rd	Cook	T-1A
1086		TS5925	Willow Rd	Sanders Rd	Cook	T-1A
1087	10	TS5930	Willow Rd	Old Willow Rd	Cook	T-1A
1088	10	TS5931	Willow Rd	Ravina Way	Cook	T-1A
1089		TS5932	Willow Rd	Patriot Blvd	Cook	T-1A
1090		TS5933	Willow Rd	Westleigh Dr Founders Dr	Cook	T-1A
1091	09	TS5935	Willow Springs Rd	Plainfield Rd	Cook	T-1A
1092		TS5940	Wireton Rd	Francisco Ave	Cook	T-1A
1093	04	TS5944	Wolf Rd	Edward Rd	Cook	T-1A
1094	04	TS5945	Wolf Rd	Camp McDonald Rd	Cook	T-1A
1095	04	TS5950	Wolf Rd	Willow Rd / Old Willow Rd	Cook	T-1A
1096	04	TS5955	Wolf Rd	Howard St	Cook	T-1A
1097	04	TS5965	Wood St	171st St	Cook	T-1A
1098		TS6077	US 20 (Lake St)	North Ave / East Bartlett Rd	Cook	T-1A
1099	04	TS6612	US 45 (LaGrange Rd)	IL 83 (Cal Sag Rd) W Ramps	Cook	T-1A
1100	04	TS6613	US 45 (LaGrange Rd)	IL 83 (Cal Sag Rd) E Ramps	Cook	T-1A
1101	10	TS7185	Lake Cook Rd	Hart Rd	Cook	T-1A
1102		TS7417	US 45 (La Grange Rd)	183rd St	Cook	T-1A
1103	09	TS7635	IL 19 (Irving Park Rd)	Rodenburg Rd	Cook	T-1A
1104		TS7637	IL 19 Irving Park Rd	Wright Blvd	Cook	T-1A
1105	09	TS7645	IL 43 (Harlem Ave)	Grand Ave / Fullerton Ave	Cook	T-1A
1106	04	TS7655	IL 62 (Algonquin Rd)	Lexington Dr	Cook	T-1A
1107		TS7860	Barrington Rd	Tower Dr	Cook	T-1A
1108	04	TS7885	IL 62 (Algonquin Rd)	Quentin Rd	Cook	T-1A
1109		TS7947	IL 43 (Harlem Ave)	34th St / Windsor Ave	Cook	T-1A
1110		TS7950	IL 43 (Harlem Ave)	32nd St	Cook	T-1A
1111	10	TS8780	IL 58 (Golf Rd)	Woodfield Mall Center Entrance	Cook	T-1A
1112	10	TS8785	IL 58 (Golf Rd)	Woodfield Mall W Entrance	Cook	T-1A
1113	10	TS8790	IL 58 (Golf Rd)	Woodfield Mall E Ent / Hyatt Entrance	Cook	T-1A
1114	01	TS8800	IL 64 (North Ave)	Winston Plaza Entrance	Cook	T-1A
1115		TS8905	Golf Rd	Lamon Ave East Old Orchard	Cook	T-1A
1116	01	TS8910	IL 43 (Harlem Ave)	167th St	Cook	T-1A
1117	01	TS8920	IL 43 (Harlem Ave)	171st St	Cook	T-1A
1118	01	TS8935	IL 43 (Harlem Ave)	163rd St / Bremontown Rd	Cook	T-1A
1119	10	TS8940	IL 19 (Irving Park Rd)	Park Blvd	Cook	T-1A
1120	10	TS9085	IL 72 (Higgins Rd)	Devon Ave	Cook	T-1A
1121	10	TS9090	IL 72 (Higgins Rd)	Scott St	Cook	T-1A
1122		TS9155	IL 83 147 th St	Cleveland	Cook	T-1A
1123		TS9160	IL 83 147 th St	Harrison St	Cook	T-1A
1124		TS9165	IL 83	Sacramento	Cook	T-1A
1125	02	TS9185	Talcott Ave	Cumberland Ave	Cook	T-1A
1126		TS9190	Cumberland (in Park Ridge)	Touhy Ave (in Park Ridge)	Cook	T-1A
1127	02	TS9205	Talcott Ave	Greenwood Rd	Cook	T-1A
1128		TS9215	Northwest Hwy	Meacham Ave	Cook	T-1A
1129		TS9220	Northwest Hwy	Washington St	Cook	T-1A
1130		TS9222	Touhy Ave	Summit	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1131		TS9240	Busse Hwy	Meacham Touhy (in Park Ridge)	Cook	T-1A
1132	02	TS9245	Devon Ave	Talcott Ave / Cortland Ave	Cook	T-1A
1133		TS9247	US 14 Northwest Hwy	Summit	Cook	T-1A
1134		TS9250	US 14 Northwest Hwy	Prospect Ave (in Park Ridge)	Cook	T-1A
1135		TS9255	Touhy Ave	Washington St	Cook	T-1A
1136	04/10	TS9295	Western Ave	26th St	Cook	T-1A
1137	04	TS9297	Western Ave	Norwood Square SC Entrance	Cook	T-1A
1138	04	TS9300	Western Ave	Beacon Blvd	Cook	T-1A
1139	02	TS9335	Crawford Ave / Pulaski Rd	107th St	Cook	T-1A
1140	01	TS9360	22nd St / Cermak Rd	Mid City Bank Ent / N Riverside Plaza	Cook	T-1A
1141		TS9625	IL 83 (Elmhurst Rd)	Lonnquist Blvd	Cook	T-1A
1142		TS9630	IL 83 (Elmhurst Rd)	US 14 (Northwest Highway)	Cook	T-1A
1143		TS9640	US 14 (Northwest Highway)	Emerson St	Cook	T-1A
1144	04	TS9653	Central Rd	Busse Rd	Cook	T-1A
1145	09	TS9654	3 Com Entrance	Central Rd	Cook	T-1A
1146	04	TS9660	IL 83 (Elmhurst Rd)	Central Rd	Cook	T-1A
1147	10	TS9665	IL 83 (Elmhurst Rd)	Council Tr	Cook	T-1A
1148		TS9670	IL 83 (Elmhurst Rd)	Lincoln St	Cook	T-1A
1149		TS9690	US 14 (Northwest Highway)	Central Rd	Cook	T-1A
1150		TS9726	147 th St	Oakpark Justamere	Cook	T-1A
1151	03	TS9727	143rd St	Justamere Rd	Cook	T-1A
1152	03	TS9950	US 6 (159th St)	Oak Forest Hospital Entrance	Cook	T-1A
1153		TS10125	IL 43 (Harlem Ave)	Harlem Irving Plaza	Cook	T-1A
1154	10	TS10595	IL 43 (Waukegan Rd)	Kraft Food Entrance / Three Lakes Dr	Cook	T-1A
1155	04	TS10635	US 6 (159th St)	Central Park Ave	Cook	T-1A
1156	04	TS10640	US 6 (159th St)	Richmond Ave	Cook	T-1A
1157	10	TS10880	IL 43 (Waukegan Rd)	Dewes St / River Dr	Cook	T-1A
1158	10	TS10900	IL 43 (Waukegan Rd)	Carillon Square Entrance	Cook	T-1A
1159	10	TS10905	IL 43 (Waukegan Rd)	Glenview Rd	Cook	T-1A
1160	01	TS10915	IL 64 (North Ave)	Jewel Foods Plant Entrance	Cook	T-1A
1161	04	TS10920	IL 43 (Waukegan Rd)	Grove St	Cook	T-1A
1162		TS10970	US 12 45 Mannheim Rd	Belmont	Cook	T-1A
1163		TS11015	US 12 45 Mannheim Rd	Grand Ave	Cook	T-1A
1164	01	TS11030	US 12/45 (Mannheim Rd)	Seymour Ave	Cook	T-1A
1165	01	TS11035	US 12/45 (Mannheim Rd)	Waveland Ave	Cook	T-1A
1166		TS11040	Des Plaines River Rd	King Ave	Cook	T-1A
1167	01	TS11080	55th St	Electro Motive Dr	Cook	T-1A
1168	01	TS11086	55th St	Sergo Dr	Cook	T-1A
1169	09	TS11130	IL 59 (Sutton Rd)	Shoe Factory Rd	Cook	T-1A
1170	09	TS11133	IL 72 (Higgins Rd)	Shoe Factory Rd	Cook	T-1A
1171		TS11161	Touhy Ave	Northpoint Plaza Entrance / Circuit City	Cook	T-1A
1172	02	TS11170	IL 58 (Golf Rd)	Michael Manor	Cook	T-1A
1173	10	TS11175	US 12/45 (Mannheim Rd)	Devon Ave / Zemke Blvd	Cook	T-1A
1174	10	TS11185	Devon Ave	Kenton Ave / Lemont Ave	Cook	T-1A
1175	09	TS11190	US 30 (Lincoln Highway)	Matteson Shopping Center Entrance	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1176	02	TS11210	IL 58 (Golf Rd)	Milwaukee Plaza Ent / Toys R Us Ent	Cook	T-1A
1177		TS11245	US 12/45 (Lee St)	US 12/45 (Mannheim Rd)	Cook	T-1A
1178		TS11250	Touhy Ave	Central Ave	Cook	T-1A
1179	10	TS11270	US 20 (Lake St)	Bartlett Rd	Cook	T-1A
1180	09	TS11280	IL 59 (Hough Rd)	Main St / Lake Cook Rd	Cook	T-1A
1181	09	TS11282	Main St / Lake Cook Rd	Applebee's Entrance	Cook	T-1A
1182	09	TS11285	Barrington Rd	Palatine Rd	Cook	T-1A
1183	10	TS11290	US 12 Rand	IL 53 West Ramp	Cook	T-1A
1184	10	TS11295	US 12 (Rand Rd)	IL 53 E Ramps	Cook	T-1A
1185	10	TS11305	Pfingsten Rd	West Lake Ave	Cook	T-1A
1186		TS11310	IL 72 (Higgins Rd / Oakton St)	IL 83 (Busse Rd)	Cook	T-1A
1187	10	TS11320	Arlington Heights Rd	Northwest Point Blvd S Junction	Cook	T-1A
1188	01	TS11325	IL 43 (Harlem Ave)	161st St	Cook	T-1A
1189	01	TS11330	US 6 (159th St)	Park Center Plaza Entrance	Cook	T-1A
1190	04	TS11345	US 30 (Lincoln Highway)	Mid Continent Dr	Cook	T-1A
1191	03	TS11350	US 6/IL 83 (Torrence Ave)	Landings Shopping Center Entrance	Cook	T-1A
1192	09	TS11355	Margaret St / Thornton Lansing Rd	Williams St / Vincennes Rd	Cook	T-1A
1193		TS11356	Margaret St / Thornton Lansing	Schwab St	Cook	T-1A
1194	09	TS11360	Williams St / Vincennes Rd	Eleanor St	Cook	T-1A
1195	03	TS11460	IL 83 (147th St / Sibley Blvd)	Woodlawn Ave	Cook	T-1A
1196		TS11465	IL 83 Sibley 147 th St	Greenwood Ave	Cook	T-1A
1197	03	TS11470	IL 83 (147th St / Sibley Blvd)	Engle Pl	Cook	T-1A
1198	03	TS11475	IL 83 (147th St / Sibley Blvd)	Cottage Grove Ave	Cook	T-1A
1199	03	TS11635	IL 171 (Archer Ave)	65th St	Cook	T-1A
1200	04	TS11640	US 12/20 (95th St)	Kean Ave	Cook	T-1A
1201		TS11645	IL 50 Cicero Ave	23 rd Delray Farms	Cook	T-1A
1202		TS11690	IL 68 (Dundee Rd)	Northgate Parkway	Cook	T-1A
1203		TS11695	US 14	Elm St	Cook	T-1A
1204	02	TS11710	US 6 (159th St)	Arroyo Dr	Cook	T-1A
1205	09	TS11715	Western Ave	Sauk Trail Rd	Cook	T-1A
1206		TS11716	Western Ave	South St / Main St	Cook	T-1A
1207	03	TS11720	IL 50 (Cicero Ave)	175th St	Cook	T-1A
1208	04	TS11725	Dixie Highway	Flossmoor Rd / Cambridge Ave	Cook	T-1A
1209	10	TS11730	Hicks Rd	Northrop Grummen Corp Ent	Cook	T-1A
1210	10	TS11735	Hicks Rd	Hellen Rd	Cook	T-1A
1211	10	TS11745	IL 394	Sauk Trail Rd	Cook	T-1A
1212		TS11750	US 6 159 th St	Park Ave Harvey	Cook	T-1A
1213	09	TS11755	Ashland Ave/Wood St	Thornton Blue Island Rd	Cook	T-1A
1214		TS11760	US 12 20 95 th St	76 th Ave	Cook	T-1A
1215		TS11765	US 12 20 95 th St	88 th Ave	Cook	T-1A
1216		TS11770	Ridgeland Ave	IL 7 Southwest Hwy	Cook	T-1A
1217	01	TS11785	US 12/20 (95th St)	California Ave	Cook	T-1A
1218	01	TS11790	US 12/20 (95th St)	Utica Ave	Cook	T-1A
1219	01	TS11800	22nd St / Cermak Rd	1st Ave Cutoff	Cook	T-1A
1220		TS11805	IL 171 (1st Ave) Frontage Rd	47th St W Ramps	Cook	T-1A
1221		TS11810	IL 171 (1st Ave) Frontage Rd	47th St E Ramps	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1222		TS11853	94th Ave	Kedzie Ave	Cook	T-1A
1223	07	TS11860	IL 68 (Dundee Rd)	Ela Rd	Cook	T-1A
1224		TS11861	IL 68 Dundee East Ramp	US 14 (Northwest Highway)	Cook	T-1A
1225		TS11862	IL 68 Dundee West Ramp	US 14 (Northwest Highway)	Cook	T-1A
1226	04	TS11865	Main St (Vincennes Rd)	Glenwood Rd	Cook	T-1A
1227	09	TS11870	IL 72 Higgins Rd	Lee Ramp/Trammel	Cook	T-1A
1228		TS11965	IL 64 (North Ave)	Polk Plaza Shopping Center Entrance	Cook	T-1A
1229	10	TS11985	US 14 (Northwest Highway)	Hicks Rd N Junction	Cook	T-1A
1230	04	TS12000	US 6/IL 83 (Torrence Ave)	Bernice Rd / 173rd St	Cook	T-1A
1231	10	TS12005	Hicks Rd	Old Hicks Rd	Cook	T-1A
1232		TS12010	IL 58 (Dempster St)	Gross Point Rd	Cook	T-1A
1233		TS12015	IL 56 (Butterfield Rd)	Taft Ave	Cook	T-1A
1234	09	TS12025	Lawrence Ave	25th Ave / Ruby St	Cook	T-1A
1235	02	TS12035	Crawford Ave/Pulaski Rd	93rd St	Cook	T-1A
1236	04	TS12075	IL 72 (Higgins Rd)	Huntington Blvd	Cook	T-1A
1237	10	TS12090	Touhy Ave	Barclay Pl / Hyatt Dr	Cook	T-1A
1238	10	TS12100	State St	Taft	Cook	T-1A
1239		TS12101	State St	168 th Ave	Cook	T-1A
1240		TS12102	State St	Armory Dr	Cook	T-1A
1241	03	TS12105	142nd St	Cottage Grove Rd	Cook	T-1A
1242	04	TS12115	IL 1 (Halsted St)	Park Place Plaza Entrance	Cook	T-1A
1243	04	TS12125	IL 83 (Busse Rd)	Howard St	Cook	T-1A
1244	02	TS12135	111th St	Kostner Ave	Cook	T-1A
1245	10	TS12155	IL 53 IL 68 Dundee Rd	IL 53 West Ramp	Cook	T-1A
1246		TS12160	IL 53 IL 68 Dundee Rd	IL 53 East Ramp	Cook	T-1A
1247		TS12165	27th Ave	US 20 (Lake St)	Cook	T-1A
1248		TS12175	US 12 Rand Rd	Winslowe Dr Park Pl	Cook	T-1A
1249	03	TS12220	IL 171 (Archer Ave)	66th Pl	Cook	T-1A
1250	04	TS12400	IL 50 (Cicero Ave)	Southwick Dr	Cook	T-1A
1251	09	TS12403	IL 50 (Cicero Ave)	Wal Mart Entrance	Cook	T-1A
1252	04	TS12404	IL 50 (Cicero Ave)	North Gateway Dr	Cook	T-1A
1253	03	TS12530	IL 43 (Harlem Ave)	100th Pl	Cook	T-1A
1254	09	TS12535	Arlington Heights Rd	White Oak St	Cook	T-1A
1255	10	TS12540	Arlington Heights Rd	Central Rd	Cook	T-1A
1256	10	TS12550	Arlington Heights Rd	Sigwalt St	Cook	T-1A
1257	10	TS12555	Arlington Heights Rd	US 14 (Northwest Highway)	Cook	T-1A
1258	10	TS12560	Arlington Heights Rd	Miner St	Cook	T-1A
1259	10	TS12565	Arlington Heights Rd	Euclid St	Cook	T-1A
1260	04	TS12585	Arlington Heights Rd	Lillian Ave	Cook	T-1A
1261	10	TS12590	Arlington Heights Rd	Palatine Rd	Cook	T-1A
1262	04	TS12595	Arlington Heights Rd	US 12 (Rand Rd)	Cook	T-1A
1263	10	TS12600	Arlington Heights Rd	North Point SC Entrance	Cook	T-1A
1264	10	TS12615	Central Rd	Kirchoff Rd	Cook	T-1A
1265	09	TS12620	Central Rd	Arthur Ave / McKinley Ave	Cook	T-1A
1266	04	TS12625	US 12 (Rand Rd)	Cub Foods Entrance	Cook	T-1A
1267	10	TS12630	US 12 (Rand Rd)	Palatine Rd	Cook	T-1A
1268	04	TS12635	US 12 (Rand Rd)	Northpoint Center Entrance	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1269	04	TS12640	US 12 (Rand Rd)	Arlington Plaza Entrance	Cook	T-1A
1270		TS12660	Euclid St	US 14 (Northwest Highway)	Cook	T-1A
1271	10	TS12665	US 14 (Northwest Highway)	Arthur Ave / McKinley Ave / Davis St	Cook	T-1A
1272	10	TS12675	US 14 (Northwest Highway)	Evergreen Ave	Cook	T-1A
1273	10	TS12680	US 14 (Northwest Highway)	Dunton Ave	Cook	T-1A
1274	10	TS12685	US 14 (Northwest Highway)	Vail Ave	Cook	T-1A
1275	10	TS12690	US 14 (Northwest Highway)	Walnut Ave / Ridge Ave	Cook	T-1A
1276	04	TS12700	US 12 (Rand Rd)	Annex of Arlington SC Entrance	Cook	T-1A
1277		TS12770	IL 50 Cicero Ave	Cermak Rd 22 nd St	Cook	T-1A
1278		TS12775	Cermak Rd 22 nd St	49 th Ave	Cook	T-1A
1279	03	TS12780	Cermak Rd 22 nd St	50th Ave	Cook	T-1A
1280		TS12785	Cermak Rd 22 nd St	Laramie Ave	Cook	T-1A
1281	01	TS12790	Cermak Rd	54th Ave	Cook	T-1A
1282		TS12795	IL 50 Cicero Ave	16 th St	Cook	T-1A
1283		TS12825	IL 50 Cicero Ave	19 th St	Cook	T-1A
1284		TS12830	IL 50 Cicero Ave	29 th St	Cook	T-1A
1285	04	TS12985	Touhy Ave	Maple St	Cook	T-1A
1286	10	TS12995	Oakton St	Webster Ln	Cook	T-1A
1287		TS13000	US 12/45 (Lee St)	Algonquin Rd	Cook	T-1A
1288	04	TS13005	IL 62 (Algonquin Rd)	Seymour Ave	Cook	T-1A
1289		TS13020	IL 58 (Golf Rd)	Mt Prospect Rd	Cook	T-1A
1290	02	TS13025	US 12/45 (Lee St)	Prairie Ave	Cook	T-1A
1291	02	TS13026	US 12/45 (Lee St)	Thacker St	Cook	T-1A
1292	02	TS13027	US 12/45 (Graceland Ave)	Thacker St	Cook	T-1A
1293		TS13035	US 12/45 (Lee St)	US 14 (Miner St) / Ellenwood St	Cook	T-1A
1294	02	TS13040	US 14 (Northwest Highway/Miner St)	Pearson St	Cook	T-1A
1295	02	TS13050	US 12/45 (Graceland Ave)	Prairie Ave	Cook	T-1A
1296		TS13055	US 12 45 Graceland Jefferson	US 14 Miner	Cook	T-1A
1297		TS13065	US 12/45 (Mannheim Rd)	Prospect Ave	Cook	T-1A
1298		TS13070	Des Plaines River Rd	Perry St	Cook	T-1A
1299		TS13072	Des Plaines River Rd	Pearson	Cook	T-1A
1300	10	TS13075	US 14 (Miner St)	Des Plaines River Rd	Cook	T-1A
1301	10	TS13080	US 14 (Northwest Highway)	State St / Cornell Ave	Cook	T-1A
1302	10	TS13085	US 12 Rand Rd	3 rd Ave	Cook	T-1A
1303	04	TS13140	IL 72 (Higgins Rd)	Lively Blvd	Cook	T-1A
1304		TS13145	IL 53 (Rohlwing Rd)	Nerge Rd	Cook	T-1A
1305	10	TS13150	IL 53 (Rohlwing Rd)	Biesterfield Rd	Cook	T-1A
1306	10	TS13285	IL 58 Summit	Hiawatha Dr	Cook	T-1A
1307		TS13286	IL 58 Summit	Waverly Dr	Cook	T-1A
1308	10	TS13440	IL 19 (Irving Park Rd)	Willard St	Cook	T-1A
1309	09	TS13470	Wolf Rd	Thacker St / Dempster St	Cook	T-1A
1310		TS13685	Des Plaines Ave	Jackson Blvd	Cook	T-1A
1311		TS13687	CTA	Des Plaines Ave	Cook	T-1A
1312	01	TS13700	Roosevelt Rd	Circle Ave	Cook	T-1A
1313		TS13745	IL 19 Irving Park Rd	Barrington Rd	Cook	T-1A
1314		TS13750	IL 19 Irving Park Rd	Menards	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1315		TS13755	IL 19 Irving Park Rd	Kingsbury	Cook	T-1A
1316		TS13756	IL 19 Irving Park Rd	Westview Center	Cook	T-1A
1317		TS13762	US 20 (Lake St)	Center Ave	Cook	T-1A
1318		TS13765	US 20 (Lake St)	Barrington Rd	Cook	T-1A
1319	02	TS13855	US 34 (Ogden Ave)	Brainard Ave	Cook	T-1A
1320	02	TS13860	US 34 (Ogden Ave)	Waiola Ave	Cook	T-1A
1321	02	TS13865	US 34 (Ogden Ave)	Kensington Ave	Cook	T-1A
1322	02	TS13870	US 34 (Ogden Ave)	Eberle Ave / East Ave	Cook	T-1A
1323	02	TS13871	US 34 (Ogden Ave)	DuBois Blvd	Cook	T-1A
1324	02	TS13872	US 34 (Ogden Ave)	Maple Ave	Cook	T-1A
1325	02	TS13873	US 34 (Ogden Ave)	Prairie Ave	Cook	T-1A
1326	02	TS13880	US 12/20/45 (La Grange Rd)	Harris Ave	Cook	T-1A
1327	09	TS13885	US 12/20/45 (La Grange Rd)	Cossitt Ave	Cook	T-1A
1328	01	TS13890	47th St	Gilbert Ave / Willow Springs Rd	Cook	T-1A
1329	01	TS13895	47th St	Edgewood Ave	Cook	T-1A
1330	02	TS13900	Brainard Ave	47th St	Cook	T-1A
1331	07	TS13905	US 12/20/45 (La Grange Rd)	Burlington Ave / Hillgrove Ave	Cook	T-1A
1332	02	TS13910	US 12/20/45 (La Grange Rd)	US 34 (Ogden Ave)	Cook	T-1A
1333	02	TS13915	US 12/20/45 (La Grange Rd)	Harding Ave	Cook	T-1A
1334	02	TS13920	US 12/20/45 (La Grange Rd)	Homestead Rd / Pine Ave	Cook	T-1A
1335		TS13923	31st St	Brainard Ave	Cook	T-1A
1336	03	TS13925	31st St	Forest Rd	Cook	T-1A
1337	03	TS13930	31st St	Raymond Ave	Cook	T-1A
1338	03	TS13940	IL 83 (Torrence Ave)	178th St	Cook	T-1A
1339		TS13942	I 80 94	Torrence	Cook	T-1A
1340	02	TS14155	IL 171 (1st Ave)	US 34 (Ogden Ave)	Cook	T-1A
1341	02	TS14157	US 34 (Ogden Ave)	Lawndale Ave	Cook	T-1A
1342	03	TS14160	IL 171 (1st Ave)	Plainfield Rd	Cook	T-1A
1343	02	TS14165	IL 171 (1st Ave)	44th St	Cook	T-1A
1344	02	TS14170	US 34 (Ogden Ave)	Plainfield Rd	Cook	T-1A
1345	02	TS14175	US 34 (Ogden Ave)	Custer Ave	Cook	T-1A
1346		TS14190	5th Ave	Washington	Cook	T-1A
1347		TS14195	5th Ave	Madison	Cook	T-1A
1348		TS14200	5th Ave	Lake St	Cook	T-1A
1349	09	TS14205	5th Ave	Chicago Ave	Cook	T-1A
1350		TS14215	17th Ave	Madison St	Cook	T-1A
1351		TS14220	9th Ave	Lake St	Cook	T-1A
1352	03	TS14245	9th Ave	Chicago Ave	Cook	T-1A
1353	01	TS14265	IL 64 (North Ave)	15th Ave	Cook	T-1A
1354	10	TS14270	Golf Rd	Narragansett Ave / Overlook Dr	Cook	T-1A
1355		TS14275	IL 43/IL 58 (Waukegan Rd)	Emerson St	Cook	T-1A
1356		TS14280	IL 43/IL 58 (Waukegan Rd)	Beckwith Rd	Cook	T-1A
1357	10	TS14285	IL 58 (Dempster St)	Prairie View Park Entrance	Cook	T-1A
1358		TS14325	Oakton St	Austin Ave	Cook	T-1A
1359	10	TS14330	Oakton St	Menard Ave	Cook	T-1A
1360	01	TS14375	IL 171 (Cumberland Ave)	Foster Ave	Cook	T-1A
1361		TS14395	IL 43 (Harlem Ave)	Cullom Ave	Cook	T-1A
1362	04	TS14400	IL 43 (Waukegan Rd)	Walters Ave	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1363		TS14402	IL 43 (Waukegan Rd)	Voltz Rd	Cook	T-1A
1364	10	TS14430	IL 43 (Waukegan Rd)	Shermer Rd	Cook	T-1A
1365	04	TS14480	IL 43 (Waukegan Rd)	Christian Heritage School Entrance	Cook	T-1A
1366	04	TS14715	Palatine Rd	Smith St	Cook	T-1A
1367	10	TS14720	Palatine Rd	Brockway St	Cook	T-1A
1368	10	TS14725	Palatine Rd	Plum Grove Rd	Cook	T-1A
1369	04	TS14730	Hicks Rd	First Bank Dr / Palatine Mall Entrance	Cook	T-1A
1370	09	TS14741	IL 62 (Algonquin Rd)	Carriage Way / Essex Way	Cook	T-1A
1371	04	TS14744	IL 62 (Algonquin Rd)	Weber Rd / Old Wilke Rd	Cook	T-1A
1372	10	TS14750	IL 62 (Algonquin Rd)	Hammond Dr	Cook	T-1A
1373	09	TS14755	IL 62 (Algonquin Rd)	Motorola E Dr / Village Tree Entrance	Cook	T-1A
1374	09	TS14760	IL 62 (Algonquin Rd)	Motorola W Dr / Plum Grove Rd	Cook	T-1A
1375	09	TS14765	IL 62 (Algonquin Rd)	Thoreau Dr / Thorntree Ln	Cook	T-1A
1376	02	TS14780	IL 62 (Algonquin Rd)	Meacham Rd	Cook	T-1A
1377		TS14820	Howard St	Niles Center Rd	Cook	T-1A
1378	10	TS14835	Touhy Ave	Niles Center Rd / Carpenter Rd	Cook	T-1A
1379	04	TS14840	Touhy Ave	Laramie Ave	Cook	T-1A
1380	04	TS14845	Touhy Ave	Leclair Ave	Cook	T-1A
1381	02	TS14855	US 12/45 (Mannheim Rd)	Hirsch Ave / Soffel Ave	Cook	T-1A
1382	01	TS15105	US 12/45 (Mannheim Rd)	Dorchester Ave / Balmoral Ave	Cook	T-1A
1383	01	TS15110	IL 38 (Roosevelt Rd)	Westchester Blvd	Cook	T-1A
1384	01	TS15115	22nd St / Cermak Rd	Mayfair Ave	Cook	T-1A
1385	01	TS15120	US 12/45 (Mannheim Rd)	Canterbury St	Cook	T-1A
1386		TS20341	Touhy Ave	Lawndale Ave	Cook	T-1A
1387	04	TS20345	Touhy Ave	Lincolnwood Town Center Entrance	Cook	T-1A
1388	10	TS20355	Niles Center Rd / Carpenter Rd	Village Crossing Entrance D	Cook	T-1A
1389	01	TS20365	US 6 (159th St)	91st Ave / Park Hill Dr	Cook	T-1A
1390	02	TS20366	IL 50/IL 83 (Cicero Ave)	137th St	Cook	T-1A
1391	10	TS20380	US 14 (Northwest Highway)	Ela Rd	Cook	T-1A
1392	09	TS20385	Ballard Rd	Bender Rd / East River Rd	Cook	T-1A
1393	04	TS20395	McCormick Blvd	Lincolnwood Town Center Entrance	Cook	T-1A
1394	09	TS20400	Barrington Rd	St Alexis Hospital / Hoffman Medical	Cook	T-1A
1395	10	TS20402	IL 58 (Golf Rd)	Hoffman Estates SC Entrance	Cook	T-1A
1396		TS20405	US 45 IL 21 Milwaukee Ave	US 45 DesPlaines	Cook	T-1A
1397		TS20435	IL 50 Cicero Ave	24 th Pl Hawthorne Works	Cook	T-1A
1398		TS20480	Palatine Rd	Roselle Rd	Cook	T-1A
1399	04	TS20490	US 6 (159th St)	108th Ave	Cook	T-1A
1400	01	TS20491	US 6 (159th St)	Ravinia Way	Cook	T-1A
1401	02	TS20495	IL 50 (Cicero Ave)	120th St	Cook	T-1A
1402	03	TS20525	IL 171 (Archer Ave)	Bulldog Dr / 57th St	Cook	T-1A
1403	04	TS20555	IL 43 (Waukegan Rd)	Niles Civic Center Plaza Entrance	Cook	T-1A
1404	04	TS20560	US 6 (Wolf Rd)	167th St	Cook	T-1A
1405		TS20575	US 20 (Lake St)	Walnut Ave	Cook	T-1A
1406	04	TS20590	US 14 (Northwest Highway)	First Bank Entrance	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1407	10	TS20605	I-290/IL 53	Biesterfield Rd W Ramps	Cook	T-1A
1408		TS20610	I-290/IL 53	Biesterfield Rd E Ramps	Cook	T-1A
1409		TS20615	Brainard Ave	Hegewisch Metra Parking Lot Entrance	Cook	T-1A
1410	10	TS20935	Touhy Ave	Village Crossing SC Entrance C	Cook	T-1A
1411		TS20945	US 45 (LaGrange Rd/96th Ave)	179th St	Cook	T-1A
1412	09	TS20955	US 6/IL 83 (Torrence Ave)	166th St / Fieldcrest Dr	Cook	T-1A
1413	02	TS20965	127th St	Kostner Ave	Cook	T-1A
1414		TS21015	IL 50 Cicero Ave	105 th St	Cook	T-1A
1415	03	TS21090	Glenwood Dyer Rd	Stoney Island Ave	Cook	T-1A
1416		TS21100	IL 83 (Old McHenry Rd)	Lexington Dr	Cook	T-1A
1417	02	TS21125	IL 58 (Golf Rd)	Golf Glen Shopping Center Entrance	Cook	T-1A
1418	04	TS21130	Barrington Rd	Old Church Rd	Cook	T-1A
1419	10	TS21145	Elmhurst Rd	Greenleaf Ave	Cook	T-1A
1420	10	TS21150	Elmhurst Rd	Pratt Ave	Cook	T-1A
1421		TS21175	31st St	Mayfair Ave	Cook	T-1A
1422	03	TS21185	IL 83 (Torrence Ave)	Glenwood Lansing Rd	Cook	T-1A
1423	04	TS21200	IL 68 (Dundee Rd)	Huntington Ln / Lake Blvd	Cook	T-1A
1424	10	TS21210	Lake Cook Rd	Ela Rd	Cook	T-1A
1425	03	TS21220	111th St	Austin Blvd	Cook	T-1A
1426	09	TS21225	Meacham Rd	American Ln	Cook	T-1A
1427	09	TS21230	Meacham Rd	Remington Ln	Cook	T-1A
1428	09	TS21235	IL 58 (Golf Rd)	Basswood Rd / Basswood St	Cook	T-1A
1429	09	TS21237	IL 58 (Golf Rd)	Wilkening Rd	Cook	T-1A
1430	10	TS21275	Willow Rd	Kraft Food Entrance / Three Lakes Dr	Cook	T-1A
1431	01	TS21280	Barrington Rd	Buttitta Dr / Laurie Ln	Cook	T-1A
1432	02	TS21285	Barrington Rd	Ramblewood Dr	Cook	T-1A
1433	09	TS21290	IL 58 (Golf Rd)	National Parkway	Cook	T-1A
1434	09	TS21320	IL 72 (Higgins Rd)	Spring Mill Rd	Cook	T-1A
1435	09	TS21322	IL 72 (Higgins Rd)	Grand Canyon Parkway	Cook	T-1A
1436	04	TS21325	IL 43 (Harlem Ave)	Oak Park Ave	Cook	T-1A
1437	03	TS21340	IL 83 (Torrence Ave)	176th St	Cook	T-1A
1438	04	TS21355	IL 62 (Algonquin Rd)	Briarwood Dr	Cook	T-1A
1439	09	TS21370	IL 58 (Golf Rd)	Knollwood Dr	Cook	T-1A
1440	09	TS21375	IL 58 (Golf Rd)	Harmon Blvd	Cook	T-1A
1441	01	TS21450	IL 19 (Irving Park Rd)	Olde Salem Dr	Cook	T-1A
1442		TS21473	IL 171 (Archer Ave)	131 st St	Cook	T-1A
1443	03	TS21475	IL 171 (Archer Ave)	Bell Rd	Cook	T-1A
1444	10	TS21510	IL 59 (Sutton Rd)	I-90 Tollway S Ramps	Cook	T-1A
1445		TS21515	IL 43 (Harlem Ave)	Vollmer Rd	Cook	T-1A
1446	03	TS21520	IL 7 (143rd St)	IL 7 (Wolf Rd)	Cook	T-1A
1447	04	TS21522	IL 7 (143rd St)	108th St	Cook	T-1A
1448	10	TS21535	IL 59 (Sutton Rd)	I-90 Tollway N Ramps / Columbine Blvd	Cook	T-1A
1449		TS21537	IL 59	Popular Creek Entrance	Cook	T-1A
1450	04	TS21550	IL 68 (Dundee Rd)	Barrington Middle School Entrance	Cook	T-1A
1451	09	TS21555	IL 72 (Higgins Rd)	Sears E Entrance / Trillium Blvd	Cook	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Grd Date	Loc #	Main Route	Nearest Cross Street	County	Pay Item
1452	09	TS21557	IL 72 (Higgins Rd)	Sears W Entrance	Cook	T-1A
1453	09	TS21560	IL 72 (Higgins Rd)	Old Sutton Rd	Cook	T-1A
1454	09	TS21595	IL 62 (Algonquin Rd)	Newport Dr	Cook	T-1A
1455	04	TS21600	Pfingsten Rd	Glenlake Dr / Glenbrook Hosp. Ent	Cook	T-1A
1456	04	TS21605	US 30 (Lincoln Highway)	Ellis St	Cook	T-1A
1457	10	TS21610	Meacham Rd	Motorola N Dr / Drummer Dr	Cook	T-1A
1458		TS21620	Meacham Rd	Motorola S Dr / Thoreau Dr	Cook	T-1A
1459	02	TS21650	IL 50 (Cicero Ave)	71st St / Wal Mart Entrance	Cook	T-1A
1460	09	TS21709	IL 19 (Irving Park Rd)	Elgin-O'Hare E Frontage Rd	Cook	T-1A
1461	09	TS21710	IL 19 (Irving Park Rd)	Elgin O'Hare W Frontage Rd	Cook	T-1A
1462	09	TS21711	Elgin O'Hare W Frontage Rd	Rodenburg Rd	Cook	T-1A
1463	09	TS21712	Elgin O'Hare E Frontage Rd	Rodenburg Rd	Cook	T-1A
1464	09	TS21720	Elgin O'Hare E Frontage Rd	Wright Blvd	Cook	T-1A
1465	09	TS21721	Elgin O'Hare W Frontage Rd	Wright Blvd	Cook	T-1A
1466	09	TS21730	Elgin O'Hare W Frontage Rd	Meacham Rd	Cook	T-1A
1467	09	TS21731	Elgin O'Hare W Frontage Rd	Meacham Rd / Medinah Rd	Cook	T-1A
1468	09	TS21770	Meacham Rd	Tower Rd / McConnor Parkway	Cook	T-1A
1469	01	TS21775	Montrose Ave	Neenah Ave	Cook	T-1A
1470	03	TS21795	Western Ave	Joe Orr Rd / Country Club Dr	Cook	T-1A
1471	10	TS21805	Palatine Rd	Chambers Dr / Jewel Osco Entrance	Cook	T-1A
1472	09	TS21845	Main St / Lake Cook Rd	Dundee Ave	Cook	T-1A
1473	09	TS21850	IL 64 (North Ave)	Wal-Mart Entrance	Cook	T-1A
1474	04	TS21855	IL 43 (Waukegan Rd)	Overlook Dr / Kraft Food Entrance	Cook	T-1A
1475	10	TS21890	Biesterfield Rd	Beisner Rd	Cook	T-1A
1476	01	TS21920	US 6 (159th St)	Jewel Entrance / Orland Town Center Ent	Cook	T-1A
1477	09	TS21955	IL 72 (Higgins Rd)	National Parkway	Cook	T-1A
1478	09	TS22035	75th St	Willow Springs Rd	Cook	T-1A
1479	03	TS22060	US 45 (La Grange Rd)	171st St	Cook	T-1A
1480	03	TS22065	22nd St / Cermak Rd	14th St	Cook	T-1A
1481		TS22095	104th Ave	123rd St / McCarthy Rd	Cook	T-1A
1482	01	TS22120	17th Ave	19th St	Cook	T-1A
1483	01	TS22121	17th Ave	23rd St	Cook	T-1A
1484	02	TS22150	Devon Ave	Greenwood Ave	Cook	T-1A
1485	03/09	TS22165	25 th Ave	Armitage	Cook	T-1A
1486	03	TS22195	127th St	State St	Cook	T-1A
1487	01	TS22215	US 12/20/45 (La Grange Rd)	58th St	Cook	T-1A
1488	08/09	TS22225	IL 58 (Golf Rd)	Rohrsen Rd	Cook	T-1A
1489	03	TS22230	IL 62 (Algonquin Rd)	Willowmere Willow Creek Church	Cook	T-1A
1490	03	TS22235	Arlington Heights Rd	Bennett Rd	Cook	T-1A
1491	09	TS22240	IL 62 (Algonquin Rd)	Penny Rd	Cook	T-1A
1492		TS22263	IL 43 (Harlem Ave)	191st St	Cook	T-1A

1	09	TS545	IL 83 (Kingery Highway)	3rd Ave	DuPage	T-1A
2		TS550	IL 83 (Kingery Highway)	22nd St / Cermak Rd	DuPage	T-1A
3	05/09	TS565	IL 83 (Kingery Highway)	63rd St	DuPage	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

4	09	TS570	IL 83 (Kingery Highway)	75th St	DuPage	T-1A
5	05	TS580	IL 83 (Kingery Highway)	Bluff Rd	DuPage	T-1A
6		TS585	IL 83 (Kingery Highway)	Central Ave	DuPage	T-1A
7	05	TS587	IL 83 (Kingery Highway)	91st St	DuPage	T-1A
8	09	TS590	IL 83 (Kingery Highway)	Foster Ave	DuPage	T-1A
9	05	TS595	IL 83 (Kingery Highway)	Grove Ave / Sherwood Dr	DuPage	T-1A
10	09	TS600	IL 83 (Kingery Highway)	Hillside Dr	DuPage	T-1A
11	02	TS605	IL 83 (Kingery Highway)	Elmhurst Shopping Center Ent	DuPage	T-1A
12	09	TS610	IL 83 (Kingery Highway)	Mark St	DuPage	T-1A
13	05	TS615	IL 83 (Kingery Highway)	Midway Dr	DuPage	T-1A
14	05	TS620	IL 83 (Kingery Highway)	Hodges Rd / Oakbrook Ct	DuPage	T-1A
15	05	TS625	IL 83 (Kingery Highway)	16th St	DuPage	T-1A
16	02	TS630	IL 83 (Kingery Highway)	Elmhurst Quarry Ent	DuPage	T-1A
17		TS635	IL 83 (Kingery Highway)	Plainfield Rd	DuPage	T-1A
18		TS637	IL 83 (Kingery Highway)	72 nd St	DuPage	T-1A
19		TS640	IL 83 (Kingery Highway)	Riverside Dr	DuPage	T-1A
20	02	TS645	IL 83 (Kingery Highway)	St. Charles Rd	DuPage	T-1A
21		TS650	IL 83 Kingery Hwy	Thorndale Ave	DuPage	T-1A
22	09	TS660	IL 53 (Rohllwing Rd)	Thorndale Ave	DuPage	T-1A
23	05	TS990	IL 53 (Rohllwing Rd)	Nordic Rd	DuPage	T-1A
24	05	TS995	IL 53 (Rohllwing Rd)	Ardmore Ave	DuPage	T-1A
25	05	TS1988	IL 19 (Irving Park Rd)	Division St	DuPage	T-1A
26	05	TS4595	US 20 (Lake St)	Fairfield Way	DuPage	T-1A
27	05	TS4600	US 20 (Lake St)	Bloomington Rd	DuPage	T-1A
28	05	TS4605	US 20 (Lake St)	Circle Dr	DuPage	T-1A
29	05	TS4610	US 20 (Lake St)	Springbrook Shopping Center	DuPage	T-1A
30	05	TS5975	I-55 N Frontage Rd	Cass Ave	DuPage	T-1A
31	05	TS5990	I-290	York Rd N Ramp / Crestview Ave	DuPage	T-1A
32	05	TS5995	I-290	US 20 (Lake St) & York Rd S Ramp	DuPage	T-1A
33	05	TS6000	I-290 E Ramp	Thorndale Ave	DuPage	T-1A
34	05	TS6005	I-290 W Ramp	Thorndale Ave	DuPage	T-1A
35		TS6015	US 20 (Lake St)	IL 83 W Ramps	DuPage	T-1A
36		TS6020	US 20 (Lake St)	Addison Rd	DuPage	T-1A
37		TS6025	US 20 (Lake St)	Church Rd	DuPage	T-1A
38		TS6030	US 20 (Lake St)	Gary Ave	DuPage	T-1A
39	09	TS6035	US 20 (Lake St)	Glen Ellyn Rd	DuPage	T-1A
40	05	TS6037	US 20 (Lake St)	Euclid Ave / Lake View Dr	DuPage	T-1A
41		TS6040	US 20 (Lake St)	IL 83 E Ramps / Grand Ave	DuPage	T-1A
42		TS6043	US 20 (Lake St)	Greenbriar Dr	DuPage	T-1A
43	05	TS6045	US 20 (Lake St)	Medinah Rd	DuPage	T-1A
44	05	TS6046	US 34 (Ogden Ave)	Commons Dr	DuPage	T-1A
45	05	TS6047	US 34 (Ogden Ave)	75th St	DuPage	T-1A
46	05	TS6048	US 34 (Ogden Ave)	Long Grove Rd	DuPage	T-1A
47	05	TS6049	US 34 (Ogden Ave)	Eola Rd	DuPage	T-1A
48	05	TS6050	US 34 (Ogden Ave)	Montgomery Rd	DuPage	T-1A
49	05	TS6051	US 34 (Ogden Ave)	Frontenac Rd	DuPage	T-1A
50	05	TS6060	US 20 (Lake St)	IL 53 (Rohllwing Rd)	DuPage	T-1A
51		TS6065	US 20 (Lake St)	Springfield Dr	DuPage	T-1A
52		TS6070	US 20 (Lake St)	Villa Ave / Wooddale Rd	DuPage	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

53		TS6075	US 20 (Lake St)	Walnut St	DuPage	T-1A
54		TS6080	US 20 (Lake St)	West Ave	DuPage	T-1A
55	05	TS6085	US 20 (Lake St)	Rosedale Ave	DuPage	T-1A
56	05	TS6089	IL 59	McCoy Dr / Fox River Commons	DuPage	T-1A
57	05	TS6090	IL 59	US 34 (Oswego Rd)	DuPage	T-1A
58	06	TS6092	IL 59	87th St / White Eagle Dr	DuPage	T-1A
59	05	TS6095	US 34 (Ogden Ave)	Cass Ave	DuPage	T-1A
60	05	TS6100	US 34 (Ogden Ave)	Pasquinelli Dr / Middaugh Dr	DuPage	T-1A
61	05	TS6110	US 34 (Ogden Ave)	IL 83 W Ramps	DuPage	T-1A
62	05	TS6115	US 34 (Ogden Ave)	IL 83 E Ramps	DuPage	T-1A
63	05	TS6116	US 34 (Ogden Ave)	Oak St / Salt Creek Ln	DuPage	T-1A
64	05	TS6118	US 34 (Ogden Ave)	York Rd	DuPage	T-1A
65	05	TS6120	US 34 (Ogden Ave)	Cross St	DuPage	T-1A
66	05	TS6125	US 34 (Ogden Ave)	Belmont Rd / Finley Rd	DuPage	T-1A
67	05	TS6130	US 34 (Ogden Ave)	Madison St	DuPage	T-1A
68	05	TS6135	US 34 (Ogden Ave)	Oakwood Rd	DuPage	T-1A
69	05	TS6140	IL 19 (Irving Park Rd)	Marshall Rd	DuPage	T-1A
70		TS6145	IL 19 (Irving Park Rd)	Medinah Rd	DuPage	T-1A
71	05	TS6155	IL 53 (Rohlwing Rd)	IL 19 (Irving Park Rd)	DuPage	T-1A
72	05	TS6156	IL 53 (Rohlwing Rd)	Bryn Mawr Ave	DuPage	T-1A
73	05	TS6157	IL 53 (Rohlwing Rd)	West Thorndale Ave	DuPage	T-1A
74	05	TS6158	IL 53 (Rohlwing Rd)	Norwood Ave	DuPage	T-1A
75	05	TS6160	IL 19 (Irving Park Rd)	Spruce Ave	DuPage	T-1A
76		TS6164	IL 19 (Irving Park Rd)	Bloomington Rd	DuPage	T-1A
77	05	TS6165	IL 19 (Irving Park Rd)	Walnut St	DuPage	T-1A
78	05	TS6170	IL 19 (Irving Park Rd)	Prospect Ave	DuPage	T-1A
79	05	TS6175	IL 38 (Roosevelt Rd)	Fabyan Parkway	DuPage	T-1A
80	05	TS6180	IL 38 (Roosevelt Rd)	Joliet Rd	DuPage	T-1A
81	05	TS6185	IL 38 (Roosevelt Rd)	Kress Rd	DuPage	T-1A
82	05	TS6190	IL 38 (Roosevelt Rd)	Meyers Rd	DuPage	T-1A
83	05	TS6195	IL 38 (Roosevelt Rd)	Summit Ave	DuPage	T-1A
84	05	TS6200	IL 38 (Roosevelt Rd)	Winfield Rd	DuPage	T-1A
85	05	TS6205	IL 59 N Ramp Dayton Ave	IL 38 (Roosevelt Rd)	DuPage	T-1A
86	05	TS6206	IL 59	IL 38 (Roosevelt Rd) S Ramp	DuPage	T-1A
87	05	TS6210	IL 38 (Roosevelt Rd)	Courtyard Shpping Center	DuPage	T-1A
88	05	TS6215	IL 64 (North Ave)	IL 53 (Columbine Ave)	DuPage	T-1A
89	05	TS6220	IL 53	75th St	DuPage	T-1A
90	05	TS6225	IL 53	Hobson Rd	DuPage	T-1A
91		TS6230	IL 53	Park Blvd	DuPage	T-1A
92	05	TS6240	IL 53	Summerhill Dr / Bell Tech	DuPage	T-1A
93	05	TS6245	IL 53	83rd St	DuPage	T-1A
94	05	TS6250	IL 53	59th St / Four Lakes Ave	DuPage	T-1A
95	05	TS6255	IL 53	Woodridge Dr / Seven Bridges Entrance	DuPage	T-1A
96	05	TS6256	IL 53	High Tr / Seven Bridges Dr	DuPage	T-1A
97	05	TS6260	IL 59 (Joliet Rd)	IL 56 (Butterfield Rd)	DuPage	T-1A
98	05	TS6265	IL 56 (Butterfield Rd)	22nd St	DuPage	T-1A
99	05	TS6270	IL 56 (Butterfield Rd)	Batavia Rd	DuPage	T-1A
100	05	TS6275	IL 56 (Butterfield Rd)	Finley Rd	DuPage	T-1A
101	05	TS6290	IL 56 (Butterfield Rd)	Lambert Rd	DuPage	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

102	05	TS6293	IL 56 (Butterfield Rd)	Fountain Square Rd	DuPage	T-1A
103	05	TS6295	IL 56 (Butterfield Rd)	Meyers Rd	DuPage	T-1A
104	05	TS6300	IL 56 (Butterfield Rd)	Midwest Rd / Summit Ave	DuPage	T-1A
105	05	TS6305	IL 56 (Butterfield Rd)	Park Blvd	DuPage	T-1A
106	05	TS6310	IL 56 (Butterfield Rd)	Fairfield Ave	DuPage	T-1A
107	05	TS6315	IL 56 (Butterfield Rd)	Naperville Rd	DuPage	T-1A
108	05	TS6320	IL 56 (Butterfield Rd)	Winfield Rd	DuPage	T-1A
109	05	TS6325	IL 56 (Butterfield Rd)	Eola Rd	DuPage	T-1A
110	05	TS6330	IL 56 (Butterfield Rd)	Herrick Rd / Weisbrook Rd	DuPage	T-1A
111	05	TS6335	IL 56 (Butterfield Rd)	Orchard Rd	DuPage	T-1A
112	05	TS6340	IL 56 (Butterfield Rd)	Glenbard South High School	DuPage	T-1A
113	05	TS6345	IL 56 (Butterfield Rd)	Trans Am Plaza Dr	DuPage	T-1A
114	05	TS6350	IL 56 (Butterfield Rd)	Woodcreek Dr / Lloyd Ave	DuPage	T-1A
115	05	TS6352	IL 56 (Butterfield Rd)	Home Depot Entrance / Esplanade Rd	DuPage	T-1A
116		TS6355	IL 59 (Ingalton Rd)	IL 64 (North Ave)	DuPage	T-1A
117	05	TS6360	IL 59	75th St	DuPage	T-1A
118		TS6362	IL 59	Beebe Dr / Costco Entrance	DuPage	T-1A
119	05	TS6365	IL 59 (Sutton Rd)	Army Trail Rd	DuPage	T-1A
120		TS6370	IL 59 (Joliet Rd)	Batavia Rd	DuPage	T-1A
121	05	TS6377	IL 59 (Ingalton Rd)	Struckman Blvd	DuPage	T-1A
122	05	TS6378	IL 59 (Ingalton Rd)	Apple Valley Dr / Home Depot Entrance	DuPage	T-1A
123		TS6379	IL 59	Woodland Hills Parkway	DuPage	T-1A
124	05	TS6380	IL 59	North Aurora Rd	DuPage	T-1A
125	05	TS6390	IL 59 (Neltner Blvd)	Forest Ave	DuPage	T-1A
126	05	TS6395	IL 59 (Joliet Rd)	Continental Dr / Meadow Ave	DuPage	T-1A
127	09	TS6400	IL 64 (North Ave)	IL 83 (Kingery Highway)	DuPage	T-1A
128	09	TS6405	IL 64 (North Ave)	Addison Rd	DuPage	T-1A
129		TS6410	IL 64 (North Ave)	Ardmore Ave	DuPage	T-1A
130	05	TS6415	IL 64 (North Ave)	Berteau Ave	DuPage	T-1A
131	05	TS6420	IL 64 (North Ave)	Bloomington Rd	DuPage	T-1A
132	05	TS6425	IL 64 (North Ave)	County Farm Rd	DuPage	T-1A
133	05	TS6430	IL 64 (North Ave)	Emroy Ave / Melrose Ave	DuPage	T-1A
134	05	TS6435	IL 64 (North Ave)	Gary Ave	DuPage	T-1A
135		TS6440	IL 64 (North Ave)	Grace St	DuPage	T-1A
136	05	TS6445	IL 64 (North Ave)	Kuhn Rd	DuPage	T-1A
137	05	TS6450	IL 64 (North Ave)	Main St {Glen Ellyn}	DuPage	T-1A
138		TS6455	IL 64 (North Ave)	Main St {Lombard}	DuPage	T-1A
139		TS5456	IL 64 (North Ave)	Lombard Rd	DuPage	T-1A
140	05	TS6460	IL 64 (North Ave)	Myrtle Ave	DuPage	T-1A
141	05	TS6465	IL 64 (North Ave)	Schmale Rd	DuPage	T-1A
142		TS6470	IL 64 (North Ave)	Michigan Ave / North Park Mall Entrance	DuPage	T-1A
143	02	TS6475	IL 64 (North Ave)	Swift Rd	DuPage	T-1A
144		TS6480	IL 64 (North Ave)	Villa Ave	DuPage	T-1A
145	05	TS6490	IL 64 (North Ave)	West Ave	DuPage	T-1A
146		TS6495	IL 64 (North Ave)	Westwood Ave	DuPage	T-1A
147	05	TS6500	IL 64 (North Ave)	York Rd	DuPage	T-1A
148		TS6505	IL 64 (North Ave)	Elmhurst Plaza Entrance	DuPage	T-1A
149		TS7695	US 20 (Lake St)	Bearflag Dr / Ontarioville Rd	DuPage	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

150		TS7800	IL 56 (Butterfield Rd)	Macarthur Dr	DuPage	T-1A
151	05	TS7830	IL 53 (Lincoln Ave)	Maple Ave	DuPage	T-1A
152	05	TS7835	IL 56 (Butterfield Rd)	IL 53	DuPage	T-1A
153		TS7851	IL 53 (Rohlwing Rd)	Mitchel Ct	DuPage	T-1A
154	05	TS7855	US 34 (Ogden Ave)	Main St {Lisle}	DuPage	T-1A
155		TS7870	US 20 (Lake St)	Bartels Rd / Arlington Rd	DuPage	T-1A
156		TS7875	US 20 (Lake St)	Bryn Mawr Ave	DuPage	T-1A
157	05	TS8225	IL 38 (Roosevelt Rd)	County Farm Rd	DuPage	T-1A
158	05	TS8370	US 34 (Ogden Ave)	Fairview Ave	DuPage	T-1A
159	05	TS8375	22nd St / Cermak Rd	Midwest Rd / Summit Ave	DuPage	T-1A
160	05	TS8377	22nd St / Cermak Rd	Shops of Oak Brook Entrance	DuPage	T-1A
161	05	TS8830	US 34 (Ogden Ave)	Washington St	DuPage	T-1A
162	05	TS8850	IL 59 (Neltner Blvd)	James St	DuPage	T-1A
163	05	TS8853	IL 59 (Neltner Blvd)	Hawthorn Ln	DuPage	T-1A
164	05	TS8855	IL 59 (Neltner Blvd)	Washington St	DuPage	T-1A
165	05	TS8860	IL 59 (Neltner Blvd)	Main St {West Chicago}	DuPage	T-1A
166	05	TS8970	IL 59 (Neltner Blvd)	22nd St	DuPage	T-1A
167		TS9022	IL 38 (Roosevelt Rd)	Kautz Rd	DuPage	T-1A
168	05	TS9035	IL 19 (Irving Park Rd)	Roselle Rd	DuPage	T-1A
169	05	TS9037	IL 19 (Irving Park Rd)	Lawerence Ave	DuPage	T-1A
170	05	TS9040	IL 19 (Irving Park Rd)	Park St	DuPage	T-1A
171	05	TS9100	IL 19 (Irving Park Rd)	Maple Ave	DuPage	T-1A
172	05	TS9450	IL 59	Diehl Rd	DuPage	T-1A
173	05	TS9455	IL 59	Bruce Ln / Brookdale Rd	DuPage	T-1A
174	09	TS9470	IL 59	I-88 S Ramp	DuPage	T-1A
175	09	TS9475	IL 59	I-88 N Ramp	DuPage	T-1A
176	05	TS10910	US 34 (Ogden Ave)	Warwick Ave / Shopping Center Entrance	DuPage	T-1A
177		TS11085	IL 59	Ferry Rd	DuPage	T-1A
178	05	TS11105	US 20 (Lake St)	Swift Rd	DuPage	T-1A
179	05	TS11180	IL 38 (Roosevelt Rd)	Fairfield Ave	DuPage	T-1A
180	05	TS11390	IL 64 (North Ave)	Venture Shopping Center	DuPage	T-1A
181	05	TS11410	IL 56 (Butterfield Rd)	Downers Dr	DuPage	T-1A
182	05	TS11415	IL 38 (Roosevelt Rd)	Lombard Shopping Center	DuPage	T-1A
183	05	TS11420	US 34 (Ogden Ave)	Saratoga St	DuPage	T-1A
184	05	TS11425	US 34 (Ogden Ave)	Main St {Downers Grove}	DuPage	T-1A
185	05	TS11655	IL 53 (Lincoln Ave)	Main St {Lisle}	DuPage	T-1A
186	05	TS11660	IL 53 (Lincoln Ave)	Short St	DuPage	T-1A
187		TS11662	IL 53 (Lincoln Ave)	I-88 North Ramp	DuPage	T-1A
188	05	TS11665	IL 53 (Lincoln Ave)	Warrenville Rd	DuPage	T-1A
189	05	TS11670	IL 53 (Lincoln Ave)	Burlington Ave	DuPage	T-1A
190	05	TS11675	US 34 (Ogden Ave)	Blackhawk Dr	DuPage	T-1A
191	05	TS11680	US 34 (Ogden Ave)	US 34 (Ogden Ave) N Ramps	DuPage	T-1A
192	05	TS11685	US 34 (Ogden Ave)	US 34 (Ogden Ave) S Ramps	DuPage	T-1A
193	05	TS11825	US 34 (Ogden Ave)	Swartz Ave	DuPage	T-1A
194	05	TS11830	US 34 (Ogden Ave)	Yackley Rd	DuPage	T-1A
195	05	TS11835	US 34 (Ogden Ave)	Indiana Ave / Western Ave	DuPage	T-1A
196	05	TS11840	US 34 (Ogden Ave)	Old Tavern Rd	DuPage	T-1A
197	06	TS11970	IL 59	83rd St / Montgomery Rd	DuPage	T-1A
198	09	TS12020	IL 59 (Neltner Blvd)	Joliet St	DuPage	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

199	05	TS12021	IL 59	Mack Rd	DuPage	T-1A
200	09	TS12045	IL 19 (Irving Park Rd)	York Rd	DuPage	T-1A
201	05	TS12065	IL 19 (Irving Park Rd)	Church Rd	DuPage	T-1A
202	05	TS12140	IL 59	Liberty St / Jefferson Ave	DuPage	T-1A
203		TS12215	IL 83	67th St	DuPage	T-1A
204	02	TS12250	IL 64 (North Ave)	I-355 Tollway E Ramp	DuPage	T-1A
205	02	TS12255	IL 64 (North Ave)	I-355 Tollway W Ramp	DuPage	T-1A
206	05	TS12310	IL 59	Audrey Rd / Aurora Market Place Shop	DuPage	T-1A
207	05	TS12320	IL 38 (Roosevelt Rd)	Finley Rd	DuPage	T-1A
208	05	TS12325	IL 38 (Roosevelt Rd)	Main St {Lombard}	DuPage	T-1A
209	05	TS12335	US 20 (Lake St)	I-355 Tollway E Ramp	DuPage	T-1A
210	05	TS12340	US 20 (Lake St)	I-355 Tollway W Ramp	DuPage	T-1A
211	06	TS12360	US 34 (Oswego Rd)	Trade St / Aurora Market Place Shop	DuPage	T-1A
212		TS12375	IL 64 (North Ave)	Prince Crossing Rd	DuPage	T-1A
213		TS12376	IL 64 (North Ave)	Fair Oaks Rd	DuPage	T-1A
214	05/09	TS12420	US 34 (Ogden Ave)	I-355 Tollway E Ramp	DuPage	T-1A
215		TS12421	US 34 (Ogden Ave)	I-355 Tollway W Ramp	DuPage	T-1A
216	05	TS12424	IL 38 (Roosevelt Rd)	Baker Hill Dr	DuPage	T-1A
217	05	TS12425	IL 38 (Roosevelt Rd)	I-355 Tollway E Ramp	DuPage	T-1A
218	05	TS12426	IL 38 (Roosevelt Rd)	I-355 Tollway W Ramp	DuPage	T-1A
219		TS12500	US 20 (Lake St)	Itasca Rd	DuPage	T-1A
220		TS12505	US 20 (Lake St)	Lombard Ave	DuPage	T-1A
221		TS12510	US 20 (Lake St)	Mill Rd	DuPage	T-1A
222		TS12513	US 20 (Lake St)	Marcus Dr	DuPage	T-1A
223	05	TS12515	US 20 (Lake St)	Kennedy Dr	DuPage	T-1A
224		TS12520	IL 53 (Rohlfing Rd)	Fullerton Ave	DuPage	T-1A
225		TS13760	US 20 (Lake St)	Metra Commuter Parking Lot / Church Rd	DuPage	T-1A
226		TS13770	US 20 (Lake St)	Greenbrook Blvd	DuPage	T-1A
227	05	TS14065	IL 38 (Roosevelt Rd)	Highland Ave	DuPage	T-1A
228	05	TS14491	22nd St / Cermak Rd	Oak Brook Center E Entrance	DuPage	T-1A
229	05	TS14492	22nd St / Cermak Rd	Oak Brook Center W Entrance	DuPage	T-1A
230	05	TS14493	22nd St / Cermak Rd	Spring Rd	DuPage	T-1A
231		TS14494	22 nd St Cermak Rd	McDonald Dr	DuPage	T-1A
232	05	TS14495	York Rd	22nd St / Cermak Rd	DuPage	T-1A
233	05	TS14497	22nd St / Cermak Rd	Windsor Dr	DuPage	T-1A
234	05	TS15090	IL 19 (Irving Park Rd)	Addison Rd	DuPage	T-1A
235	09	TS15100	IL 19 (Irving Park Rd)	Wooddale Rd	DuPage	T-1A
236	05	TS15175	IL 56 (Butterfield Rd)	Bradford Dr / Briar Brook Dr	DuPage	T-1A
237	05	TS15178	IL 56 (Butterfield Rd)	Leask Ln	DuPage	T-1A
238	05	TS15230	IL 38 (Roosevelt Rd)	Lorraine Rd	DuPage	T-1A
239	05	TS15235	IL 38 (Roosevelt Rd)	President St	DuPage	T-1A
240	05	TS15240	IL 38 (Roosevelt Rd)	Naperville Rd	DuPage	T-1A
241	09	TS15245	IL 38 (Roosevelt Rd)	Main {Wheaton}	DuPage	T-1A
242	09	TS15250	IL 38 (Roosevelt Rd)	West St / Warrenville Rd	DuPage	T-1A
243		TS15255	IL 38 (Roosevelt Rd)	Carleton Ave	DuPage	T-1A
244	05	TS15260	IL 38 (Roosevelt Rd)	Adare Dr / Saddle Rd	DuPage	T-1A
245	05	TS15261	IL 38 (Roosevelt Rd)	Marian Joy Entrance	DuPage	T-1A
246	05	TS15305	IL 38 (Roosevelt Rd)	Villa Oaks Dr	DuPage	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

247	05	TS15310	IL 38 (Roosevelt Rd)	Ardmore Ave	DuPage	T-1A
248		TS15315	IL 64 (North Ave)	Westmore Ave	DuPage	T-1A
249	05	TS20330	IL 53 (Bryant Ave)	DuPage Blvd / Baker Hill Dr	DuPage	T-1A
250	05	TS20335	IL 53 (Bryant Ave)	Pershing Ave	DuPage	T-1A
251	05	TS20360	IL 59	Meridian Parkway / Glacier Park Ave	DuPage	T-1A
252	05	TS20370	IL 56 (Butterfield Rd)	Cromwell Dr	DuPage	T-1A
253	09	TS20620	IL 59	New York St / Aurora Ave	DuPage	T-1A
254	05	TS20625	IL 56 (Butterfield Rd)	I-355 Tollway E Ramp	DuPage	T-1A
255	05	TS20630	IL 56 (Butterfield Rd)	I-355 Tollway W Ramp	DuPage	T-1A
256	05	TS20631	IL 38 (Roosevelt Rd)	Nicoll Way	DuPage	T-1A
257	05	TS20632	IL 38 (Roosevelt Rd)	Park Blvd	DuPage	T-1A
258	05	TS20634	IL 38 (Roosevelt Rd)	Lambert Rd	DuPage	T-1A
259	05	TS20635	IL 59	Fox Valley Mall N Entrance	DuPage	T-1A
260	05	TS20660	IL 56 (Butterfield Rd)	East Loop Dr	DuPage	T-1A
261	06	TS20910	US 34 (Ogden Ave)	Fox River Commons Entrance	DuPage	T-1A
262	05	TS21035	22nd St / Cermak Rd	Parkview Dr	DuPage	T-1A
263	09	TS21139	IL 59	Vantage Retail / Meijer Entrance	DuPage	T-1A
264	05	TS21250	IL 38 (Roosevelt Rd)	Blanchard St	DuPage	T-1A
265	05	TS21255	IL 38 (Roosevelt Rd)	Main St / Glen Ellyn Rd	DuPage	T-1A
266	05	TS21395	IL 64 (North Ave)	President St / Fireside Dr	DuPage	T-1A
267	05	TS21505	IL 53 (Bryant Ave)	Sheehan Ave	DuPage	T-1A
268	05	TS21700	US 34 (Ogden Ave)	Chelsea Ave / Lisle Post Office	DuPage	T-1A
269	05	TS21830	US 34 (Ogden Ave)	Downers Plaza Shopping Entrance	DuPage	T-1A
270	05	TS21870	IL 56 (Butterfield Rd)	Technology Dr / Waste Management Ent	DuPage	T-1A
271		TS21910	US 20 (Lake St)	Elgin O'Hare	DuPage	T-1A
272	05	TS21930	Aurora Ave	Westridge Ct / Naper West Shopping Ent	DuPage	T-1A
273		TS22025	US 20 (Lake St)	Rodenburg Rd	DuPage	T-1A
274	05	TS22110	IL 59	Ingalton Ave / Arbor Ave	DuPage	T-1A
275	05	TS22115	IL 59 (Ingalton Ave)	Diversey Parkway / St Andrew Golf Ent	DuPage	T-1A
276	05	TS22125	IL 59 (Sutton Rd)	Schick Rd	DuPage	T-1A
277	05	TS22135	IL 53 (Rohlwing Rd)	Sidney Ave	DuPage	T-1A

1	06	TS196	IL 38	IL 47	Kane	T-1A
2	06	TS665	IL 25 (Dundee Ave)	I-90 Tollway	Kane	T-1A
3	06	TS670	IL 25 (Liberty St)	Villa St / Business Route US 20	Kane	T-1A
4	06	TS675	US 20 (Lake St)	IL 31 (LaFox St)	Kane	T-1A
5		TS677	US 20 (Lake St)	Nesler Rd	Kane	T-1A
6		TS693	US 20 (Lake St)	Plank Rd / Coombs Rd	Kane	T-1A
7		TS700	US 30 (Baseline Rd)	US 30/IL 47	Kane	T-1A
8	06	TS703	IL 47	Keslinger Rd	Kane	T-1A
9	06	TS705	IL 31	US 30 (Briarcliff Rd) N Ramp	Kane	T-1A
10	06	TS710	IL 31	US 30 (Briarcliff Rd) S Ramp	Kane	T-1A
11	06	TS725	US 30 (Baseline Rd) IL 47	Jericho Rd	Kane	T-1A
12	06	TS727	US 30 (Baseline Rd)	Griffin Dr	Kane	T-1A
13		TS728	US 30 (Baseline Rd)	Gordon	Kane	T-1A
14	06	TS730	US 30 (Baseline Rd)	Orchard Rd	Kane	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

15		TS735	IL 31	I 88 Tlwy IL 56	Kane	T-1A
16		TS740	IL 19 (Irving Park Rd)	IL 25 (Liberty St)	Kane	T-1A
17		TS745	IL 58 (Golf Rd) / Summit St	IL 25 (Liberty St)	Kane	T-1A
18		TS750	IL 25 (River St)	IL 25 (Wilson St)	Kane	T-1A
19	06	TS755	IL 38 (State St)	IL 25 (Bennet St)	Kane	T-1A
20	06	TS760	IL 62 (Algonquin Rd)	IL 25 (JFK Memorial Dr)	Kane	T-1A
21	06	TS765	IL 25 (Dundee Ave)	IL 68 (Barrington Rd)	Kane	T-1A
22	06	TS770	IL 25 (Dundee Ave)	IL 72 (Higgins Rd)	Kane	T-1A
23	06	TS775	IL 25 (Dundee Ave)	Brandt Dr	Kane	T-1A
24	06	TS785	IL 25 (Wilson St)	IL 25 (Washington Ave)	Kane	T-1A
25	06	TS795	IL 31 (Batavia Ave / 1st St)	3rd St	Kane	T-1A
26	06	TS805	IL 38 (State St)	IL 31 (1st St)	Kane	T-1A
27	06	TS810	IL 31 (State St)	Tollgate Rd / Airport Rd	Kane	T-1A
28	06	TS815	IL 31 (State St)	Big Timber Rd	Kane	T-1A
29	06	TS820	IL 31 (State St)	Davis Rd / River Rd	Kane	T-1A
30	06	TS830	IL 31 (LaFox St)	Middle St	Kane	T-1A
31	06	TS835	IL 31 (West Lake St)	Webster St / Aucutt Rd	Kane	T-1A
32	06	TS845	IL 38 (State St)	East Side Dr	Kane	T-1A
33	06	TS856	IL 38 (State St)	Bricher Rd / 14th St	Kane	T-1A
34	06	TS857	IL 38 (Lincoln Highway)	Peck Rd	Kane	T-1A
35	06	TS858	IL 38 (State St)	Williamsburg Ave	Kane	T-1A
36		TS859	IL 38	La Fox Rd	Kane	T-1A
37	06	TS860	US 30/IL 47	Cross St	Kane	T-1A
38		TS861	US 30	Municipal Dr	Kane	T-1A
39	06	TS862	US 30	Dugan Rd	Kane	T-1A
40	06	TS865	IL 47	Galena Blvd	Kane	T-1A
41	06	TS868	IL 47	Bliss Rd / Wheeler Rd	Kane	T-1A
42		TS869	IL 47	Waubensee	Kane	T-1A
43	06	TS877	IL 64 (Main St)	Peck Rd	Kane	T-1A
44	06	TS878	IL 64 (North Ave)	Burlington Rd	Kane	T-1A
45	06	TS880	IL 68 (Penny Rd)	IL 72 (Higgins Rd)	Kane	T-1A
46	06	TS885	IL 72 (Main St)	River St	Kane	T-1A
47	06	TS890	IL 72 (Main St)	Van Buren St	Kane	T-1A
48	06	TS895	IL 72 (Main St)	1st St	Kane	T-1A
49		TS900	IL 72 Main St (In W Dundee)	2 nd St	Kane	T-1A
50	06	TS905	IL 72 (Higgins Rd)	Rock Road Dr	Kane	T-1A
51		TS920	Wilson St	Island Ave / Shimway Ave	Kane	T-1A
52		TS1000	IL 31	IL 72	Kane	T-1A
53	06	TS4305	IL 25 (JFK Memorial Dr)	Golfview Ln	Kane	T-1A
54	06	TS4310	IL 25 (JFK Memorial Dr)	Kings Rd	Kane	T-1A
55	06	TS4315	IL 25 (JFK Memorial Dr)	Besinger Dr	Kane	T-1A
56	06	TS4320	IL 25 (JFK Memorial Dr)	Helm Rd	Kane	T-1A
57	06	TS4325	IL 25 (JFK Memorial Dr)	Robin Rd	Kane	T-1A
58	06	TS4330	IL 31 (State St)	Chicago Rawhide Driveway	Kane	T-1A
59	06	TS4390	IL 25 (JFK Memorial Dr)	Lake Marian Rd / Hazard Rd	Kane	T-1A
60	06	TS4457	IL 25	West Bartlett Rd / Middle St	Kane	T-1A
61	06	TS6052	US 34 (Ogden Ave)	Rush-Copley Hospital Entrance	Kane	T-1A
62		TS6053	US 34 (Ogden Ave)	Ridge Ave / Waterford Dr	Kane	T-1A
63	06	TS7331	IL 47	Freeman Rd	Kane	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

64	06	TS7332	IL 47	Del Webb Blvd	Kane	T-1A
65		TS7339	IL 47	Big Timber Rd	Kane	T-1A
66	06	TS8975	IL 31 (2nd St)	Illinois St	Kane	T-1A
67	06	TS8990	IL 64 (Main St)	IL 25 (5th Ave)	Kane	T-1A
68	06	TS8995	IL 25 (5th Ave)	Illinois Ave	Kane	T-1A
69	06	TS9010	IL 64 (Main St)	IL 31 (2nd St)	Kane	T-1A
70	06	TS9015	IL 64 (Main St)	3rd St	Kane	T-1A
71	06	TS9016	IL 64 (Main St)	7th St	Kane	T-1A
72	06	TS9017	IL 64 (Main St)	15th St	Kane	T-1A
73	06	TS9020	IL 64 (Main St)	7th Ave	Kane	T-1A
74	06	TS9047	IL 38 (State St)	Meijer Entrance	Kane	T-1A
75	06	TS9065	IL 64 (Main St)	1st Ave	Kane	T-1A
76	06	TS9070	IL 64 (Main St)	1st St	Kane	T-1A
77	06	TS9700	IL 31 (West Lake St)	Knell St	Kane	T-1A
78	06	TS10945	IL 38 (Roosevelt Rd)	Glengarry Dr	Kane	T-1A
79	06	TS10950	IL 38 (State St)	3rd St	Kane	T-1A
80	06	TS10952	IL 38 (State St)	7th St	Kane	T-1A
81	06	TS10955	IL 38 (State St)	Anderson Blvd	Kane	T-1A
82		TS11481	IL 31	Lovedale	Kane	T-1A
83		TS11482	IL 31	Airport	Kane	T-1A
84		TS11483	IL 31	IL 56 (State St)	Kane	T-1A
85		TS11484	IL 56 (Butterfield Rd)	Hart Rd / Mitchell Rd	Kane	T-1A
86		TS11485	IL 56 (Butterfield Rd)	Kirk Rd / Farnsworth Ave	Kane	T-1A
87		TS11486	IL 56 (Butterfield Rd)	Church Rd	Kane	T-1A
88		TS11975	IL 56 (Butterfield Rd)	IL 25 (RiverRd)	Kane	T-1A
89		TS13404	IL 72	Tyrrell	Kane	T-1A
90	06	TS14865	IL 72 (Higgins Rd)	Locust Dr	Kane	T-1A
91	06	TS14867	IL 72 (Higgins Rd)	Tartans Dr	Kane	T-1A
92		TS14875	IL 72 Main St (In W. Dundee)	5 th St	Kane	T-1A
93	06	TS14880	IL 31 (Western Ave)	Spring Hill Mall Entrance / Spruce Dr	Kane	T-1A
94	06	TS14885	IL 31 (Western Ave)	Aldi Entrance	Kane	T-1A
95	06	TS14890	IL 31 (Western Ave)	Main St / Huntley Rd	Kane	T-1A
96	06	TS14895	Huntley Rd	Elm Ave / Mall Entrance "F"	Kane	T-1A
97	06	TS14900	IL 31 (8th St)	Willow Ln / Strom Dr	Kane	T-1A
98	06	TS20373	IL 31	Red Gate Rd	Kane	T-1A
99	06	TS20390	IL 38 (State St)	St Charles Mall Entrance	Kane	T-1A
100	06	TS20396	IL 31 (Western Ave)	Kane Ave	Kane	T-1A
101	06	TS21630	IL 31	Boncosky Rd	Kane	T-1A
102	06	TS21768	IL 72 (Higgins Rd)	Sleepy Hollow Rd / Carrington Dr	Kane	T-1A
103	06	TS21935	IL 31 (2nd St)	Prairie St	Kane	T-1A
104	06	TS21972	US 20	I-90 Tollway	Kane	T-1A
105	06	TS21996	IL 25	Country Club Rd	Kane	T-1A
106	06	TS22305	IL 72 (Higgins Rd)	Village Quarter Rd	Kane	T-1A

1		TS695	US 34 (Ogden Ave)	US 30 (Oswego Rd) / Ogden Falls Blvd	Kendall	T-1A
2	06	TS696	US 34 (Ogden Ave)	Hill Ave / US 30 (Lincoln Highway)	Kendall	T-1A
3		TS698	US 34 (Ogden Ave)	Hafenrichter Rd / Farnsworth Ave	Kendall	T-1A
4	06	TS715	US 30	Briarcliff Rd	Kendall	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

5	06	TS720	US 30 (Oswego Rd)	Douglas Rd	Kendall	T-1A
6	06	TS722	US 30	Fifth St	Kendall	T-1A
7		TS731	US 30	Goodwin	Kendall	T-1A
8		TS732	Hill	Goodwin	Kendall	T-1A
9		TS733	US 34 (Ogden Ave)	Commerical Dr / Menards Ent	Kendall	T-1A
10	06	TS837	IL 31 (West Lake St)	Caterpillar Rd	Kendall	T-1A
11	06	TS21390	US 30 (Lincoln Highway)	Wolfs Crossing Rd	Kendall	T-1A

1	08	TS557	IL 134 (Long Lake Rd)	Wilson Rd	Lake	T-1A
2	07	TS558	US 12/IL 59	Hartigan Rd / Home Depot Entrance	Lake	T-1A
3		TS559	US 12/IL 59	IL 134 Big Hollow Rd	Lake	T-1A
4		TS717	IL 59 (Grand Ave)	Monaville Rd	Lake	T-1A
5		TS925	IL 176 (Rockland Rd)	I-94 Tollway W Ramps	Lake	T-1A
6		TS930	IL 176 (Rockland Rd)	I-94 Tollway E Ramps	Lake	T-1A
7	08	TS935	IL 137 (Buckley Rd)	I-94 Tollway W Ramps	Lake	T-1A
8	08	TS936	IL 137 (Buckley Rd)	I-94 Tollway E Ramps	Lake	T-1A
9		TS940	US 12 (Rand Rd)	IL 22 (Main St)	Lake	T-1A
10		TS941	IL 22 (Main St)	Village Square Entrance	Lake	T-1A
11	07	TS945	US 12	Grand Ave	Lake	T-1A
12	07	TS950	US 12 (Rand Rd)	Old Rand Rd N Junction	Lake	T-1A
13		TS955	US 12 (Rand Rd)	Quentin Rd	Lake	T-1A
14		TS957	US12 (Rand Rd)	Quentin Rd Collection	Lake	T-1A
15	08	TS960	US 12 (Rand Rd)	W Lake Shore Dr / Knollwood Dr	Lake	T-1A
16	07	TS965	US 12 (Rand Rd)	Long Grove Rd	Lake	T-1A
17	07	TS966	IL 53 (Hicks Rd)	Long Grove Rd	Lake	T-1A
18	07	TS967	US 12 (Rand Rd)	Old Rand Rd S Junction	Lake	T-1A
19		TS969	US 12 Rand Rd	Deer Park	Lake	T-1A
20	07	TS975	US 12 (Rand Rd)	Cuba Rd	Lake	T-1A
21	08	TS2367	IL 43 (Waukegan Rd)	Oakmont Ave	Lake	T-1A
22	07	TS4685	US 14 (Northwest Highway)	Berry Rd	Lake	T-1A
23	07	TS4690	US 14 (Northwest Highway)	Western Chicago Aerial Industries Ent	Lake	T-1A
24	07	TS4700	US 14 (Northwest Highway)	Hart Rd	Lake	T-1A
25	07	TS6510	US 12/IL 59	IL 120 (Belvidere Rd)	Lake	T-1A
26	08	TS6511	US 12/IL 59	Old Belvidere Rd	Lake	T-1A
27	07	TS6515	US 12/IL 59 E Ramps	IL 176 (Liberty St)	Lake	T-1A
28	07	TS6516	US 12/IL 59 W Ramps	IL 176 (Liberty St)	Lake	T-1A
29	07	TS6517	IL 176 (Liberty St)	Waconda Crossing SC Entrance	Lake	T-1A
30	07	TS6520	US 12/IL 59	Bonner Rd	Lake	T-1A
31	07	TS6525	US 14 (Northwest Highway)	IL 59 (Hough Rd)	Lake	T-1A
32	07	TS6530	US 14 (Northwest Highway)	Kelsey Rd	Lake	T-1A
33	07	TS6531	IL 22 (Lake Zurich-Highwood Rd)	Kelsey Rd	Lake	T-1A
34	08	TS6535	US 41 (Skokie Highway)	IL 21 (Riverside Dr / Milwaukee Ave)	Lake	T-1A
35	08	TS6540	US 41 (Skokie Highway)	IL 22 (Half Day Rd)	Lake	T-1A
36	08	TS6543	IL 22 (Half Day Rd)	US 41 (Skokie Highway) NB Exit Ramp	Lake	T-1A
37	08	TS6545	US 41 (Skokie Highway)	IL 60 (Kennedy Rd / Town Line Rd)	Lake	T-1A
38	08	TS6550	US 41 (Skokie Highway)	IL 132 (Grand Ave)	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

39	08	TS6551	IL 132 (Grand Ave)	First St	Lake	T-1A
40	08	TS6555	US 41 (Skokie Highway)	IL 137 (Buckley Rd)	Lake	T-1A
41	08	TS6560	US 41 (Skokie Highway)	IL 173 (Rockland Rd)	Lake	T-1A
42	08	TS6565	US 41 (Skokie Highway)	Dr. Martin Luther King Dr / 22nd St	Lake	T-1A
43	08	TS6567	US 41 (Skokie Highway)	Amhurst Parkway	Lake	T-1A
44	08	TS6570	US 41 (Skokie Highway)	Delaney Rd	Lake	T-1A
45	08	TS6575	US 41 (Skokie Highway)	Old Elm Rd	Lake	T-1A
46		TS6580	US 41 (Skokie Highway)	Wadsworth Rd	Lake	T-1A
47	08	TS6585	US 41 (Skokie Highway)	Westleigh Rd	Lake	T-1A
48	08	TS6590	US 41 (Skokie Highway)	West Park Ave	Lake	T-1A
49		TS6594	US 45 IL 21 Milwaukee	Olde Half Day Rd	Lake	T-1A
50	08	TS6595	US 45/IL 21 (Milwaukee Ave)	US 45 Olde Half Day Rd	Lake	T-1A
51		TS6598	US 45	Port Clinton	Lake	T-1A
52		TS6600	US 45 IL 21 Milwaukee Ave	IL 22	Lake	T-1A
53	07	TS6605	US 45	IL 60 (Town Line Rd)	Lake	T-1A
54	07	TS6610	US 45	IL 83 (Mundelein Rd)	Lake	T-1A
55	08	TS6615	US 45	IL 132 (Grand Ave)	Lake	T-1A
56	08	TS6617	US 45	Sand Lake Rd	Lake	T-1A
57		TS6618	US 45	Dada Dr Grant Ave	Lake	T-1A
58	07	TS6620	US 45	IL 173	Lake	T-1A
59	08	TS6625	US 45 (Lake St)	IL 176 (Park Ave / Maple Ave)	Lake	T-1A
60		TS6630	US 45/IL 21 (Milwaukee Ave)	Aptakisic Rd	Lake	T-1A
61	08	TS6635	US 45	Brae Loch Rd	Lake	T-1A
62	07	TS6640	US 45	Butterfield Rd	Lake	T-1A
63	07	TS6641	US 45	Oakwood Rd	Lake	T-1A
64	08	TS6645	US 45	Center St / Deerpath Rd	Lake	T-1A
65	08	TS6650	US 45/IL 21 (Milwaukee Ave)	Deerfield Rd	Lake	T-1A
66	08	TS6655	US 45	Deerpath Dr	Lake	T-1A
67	08	TS6657	US 45	Commuter Lot / Ranney Ave	Lake	T-1A
68	08	TS6658	US 45	Buffalo Grove Rd / Fairway Dr	Lake	T-1A
69	08	TS6660	US 45/IL 21 (Milwaukee Ave)	Inverrary Ln	Lake	T-1A
70	08	TS6665	US 45/IL 21 (Milwaukee Ave)	Knightsbridge Parkway / Jamestown Ln	Lake	T-1A
71		TS6675	US 45	Peterson	Lake	T-1A
72	08	TS6680	US 45/IL 21 (Milwaukee Ave)	Busch Parkway	Lake	T-1A
73	08	TS6685	US 45	Washington St	Lake	T-1A
74		TS6695	US 45 IL 21 Milwaukee Ave	Marriott Ln	Lakw	T-1A
75		TS6698	US 45/IL 21 (Milwaukee Ave)	Audubon Way	Lake	T-1A
76	08	TS6700	IL 21 (Milwaukee Ave)	IL 60 (Town Line Rd)	Lake	T-1A
77	08	TS6705	IL 21 (Milwaukee Ave)	IL 132 (Grand Ave)	Lake	T-1A
78		TS6710	IL 21 Milwaukee Ave	IL 137	Lake	T-1A
79	07	TS6715	IL 21 (Milwaukee Ave)	IL 176 (Park Ave)	Lake	T-1A
80		TS6718	IL 21 (Milwaukee Ave)	Hollister Dr N Junction	Lake	T-1A
81	07	TS6720	IL 21 (Milwaukee Ave)	Hawthorn Center Dr Entrance # 6	Lake	T-1A
82	08	TS6725	IL 21 (Milwaukee Ave)	Hawthorn Center Dr Entrance # 7	Lake	T-1A
83	08	TS6730	IL 21 (Milwaukee Ave)	Washington	Lake	T-1A
84		TS6732	IL 21 (Milwaukee Ave)	Six Flags Riverside Dr	Lake	T-1A
85	08	TS6735	IL 22 (Half Day Rd)	IL 43 (Waukegan Rd)	Lake	T-1A
86	07	TS6740	IL 22 (Lake Zurich-Highwood Rd)	IL 59 (Hough Rd / Lake Shore Blvd)	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

87		TS6745	IL 22 (Half Day Rd)	IL 83 (Mundelein Rd)	Lake	T-1A
88	07	TS6750	IL 22 (Main St)	Church St / Midlothian Rd	Lake	T-1A
89		TS6751	IL 22 (Main St)	Buesching Rd	Lake	T-1A
90		TS6753	Midothian Rd	Oakwood Rd / Lakewood Ln	Lake	T-1A
91	07	TS6755	Main St (Lake Zurich)	Old Rand Rd	Lake	T-1A
92		TS6757	IL 22 (Half Day Rd)	Old Rand Rd	Lake	T-1A
93		TS6758	IL 22 (Half Day Rd)	East Main (Lake Zurich)	Lake	T-1A
94		TS6759	IL 22 (Half Day Rd)	West Main (Lake Zurich)	Lake	T-1A
95		TS6760	IL 22 (Half Day Rd)	Olde Half Day Rd	Lake	T-1A
96		TS6765	IL 22 (Half Day Rd)	Quentin Rd	Lake	T-1A
97	07	TS6767	IL 22 (Half Day Rd)	Kemper Insurance Entrance	Lake	T-1A
98	08	TS6770	IL 22 (Half Day Rd)	Riverwoods Rd	Lake	T-1A
99		TS6775	IL 22 (Half Day Rd)	Ela Rd	Lake	T-1A
100		TS6780	IL 22 Half Day Rd	Barclay	Lake	T-1A
101		TS6785	IL 22 (Half Day Rd)	Old Mill Grove Rd / Oakwood Rd	Lake	T-1A
102	08	TS6795	IL 43 (Waukegan Rd)	IL 60 (Town Line Rd)	Lake	T-1A
103		TS6800	IL 137 Buckley	IL 43 Waukegan Rd	Lake	T-1A
104	08	TS6805	IL 43 (Waukegan Rd)	IL 176 (Park Ave)	Lake	T-1A
105	08	TS6806	IL 43 (Waukegan Rd)	Westmoreland Rd / Middle Fork Dr	Lake	T-1A
106	08	TS6810	IL 43 (Waukegan Rd)	Dr. Martin Luther King Dr / 22nd St	Lake	T-1A
107	08	TS6815	IL 43 (Waukegan Rd)	Abbott Labs Gate # 1	Lake	T-1A
108	08	TS6820	IL 43 (Waukegan Rd)	Abbott Labs Gate # 2	Lake	T-1A
109	08	TS6830	IL 43 (Waukegan Rd)	Foster Ave	Lake	T-1A
110	07	TS6835	IL 83 (Mundelein Rd)	IL 53 (Breese Rd)	Lake	T-1A
111	07	TS6837	IL 83 (Mundelein Rd)	Robert Parker Coffin Rd	Lake	T-1A
112		TS6838	IL 53	Menards Ent	Lake	T-1A
113	07	TS6839	IL 53 (Breese Rd)	Old McHenry Rd	Lake	T-1A
114	07	TS6840	IL 59	IL 132 (Grand Ave)	Lake	T-1A
115	07	TS6845	IL 59	IL 173	Lake	T-1A
116		TS6847	IL 173	Walmart	Lake	T-1A
117	07	TS6850	IL 59 (Grand Ave)	Grand Ave / Washington Ave	Lake	T-1A
118	07	TS6855	IL 59	Grass Lake Rd	Lake	T-1A
119		TS6857	IL 59	Beach Grove Rd	Lake	T-1A
120	07	TS6860	IL 59 (Lake Shore Blvd)	Miller Rd	Lake	T-1A
121	07	TS6865	IL 60 (Town Line Rd)	Butterfield Rd	Lake	T-1A
122	07	TS6870	IL 60 (Town Line Rd)	Deerpath Dr	Lake	T-1A
123	07	TS6875	IL 60 (Town Line Rd)	Lakeview Parkway	Lake	T-1A
124	07	TS6880	IL 60 (Town Line Rd)	Hawthorn Center Dr # 3	Lake	T-1A
125	07	TS6885	IL 60 (Town Line Rd)	Hawthorn Center Dr # 4	Lake	T-1A
126	07	TS6890	IL 60 (Town Line Rd)	Hawthorn Center Dr # 5	Lake	T-1A
127	08	TS6895	IL 60 (Town Line Rd)	St Marys Rd	Lake	T-1A
128	08	TS6900	IL 60 (Town Line Rd)	Aspen Dr	Lake	T-1A
129	07	TS6905	IL 60 (Town Line Rd)	Oak Creek Plaza Entrance	Lake	T-1A
130		TS6908	IL 60	Cedar Lake Rd / Bacon Rd	Lake	T-1A
131	07	TS6910	IL 60/IL 83	Schank Ave	Lake	T-1A
132		TS6911	IL 60/IL 83	Connector Rd / Target Entrance	Lake	T-1A
133	08	TS6912	IL 60	Fairfield Rd	Lake	T-1A
134	08	TS6915	IL 60/IL 83	IL 176 (Ivanhoe Rd)	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

135	07	TS6917	IL 176 (Ivanhoe Rd)	Hawley Rd W Junction	Lake	T-1A
136	07	TS6920	IL 60/IL 83	Diamond Lake Rd	Lake	T-1A
137	07	TS6930	IL 60/IL 83	Hawley Rd	Lake	T-1A
138	07	TS6935	IL 60/IL 83	Willow Springs Rd	Lake	T-1A
139	08	TS6940	IL 83 (Ivanhoe Rd)	IL 120 (Belvidere Rd)	Lake	T-1A
140	08	TS6948	IL 83 (Milwaukee Ave)	Monaville Rd	Lake	T-1A
141		TS6949	IL 83	Engle Dr / Walmart Ent	Lake	T-1A
142		TS6950	IL 83	IL 173	Lake	T-1A
143	07	TS6955	IL 83	Aptakisic Rd	Lake	T-1A
144	07	TS6957	IL 83	Hilltop Rd	Lake	T-1A
145	07	TS6960	IL 83 (Mundelein Rd)	Arlington Heights Rd	Lake	T-1A
146	07	TS6965	IL 83 (Mundelein Rd)	Deerfield Parkway	Lake	T-1A
147		TS6970	IL 83	Grass Lake	Lake	T-1A
148		TS6975	IL 83	Buffalo Grove Rd	Lake	T-1A
149		TS6982	IL 83 (Ivanhoe Rd)	Peterson Rd	Lake	T-1A
150	07	TS6985	IL 83 (Mundelein Rd)	Buffalo Grove SC Entrance / Highpoint	Lake	T-1A
151		TS6990	IL 83	Gilmer Rd / Oakwood Rd	Lake	T-1A
152	07	TS6992	IL 83	Westmoreland Dr	Lake	T-1A
153	08	TS6995	IL 120 (Belvidere Rd)	IL 134 (Main St)	Lake	T-1A
154	08	TS7000	IL 120 (Belvidere Rd)	Hainsville Rd	Lake	T-1A
155	08	TS7005	IL 120 (Belvidere Rd)	Knight Ave	Lake	T-1A
156	08	TS7010	IL 120 (Belvidere Rd)	Oplaine Rd	Lake	T-1A
157	08	TS7015	IL 137 (Buckley Rd)	IL 131 (Green Bay Rd)	Lake	T-1A
158		TS7018	IL 131 (Green Bay Rd)	CAvin Rd	Lake	T-1A
159	08	TS7020	IL 131 (Green Bay Rd)	IL 176 (Rockland Rd)	Lake	T-1A
160	08	TS7030	IL 131 (Green Bay Rd)	Wadsworth Rd	Lake	T-1A
161		TS7035	IL 131 Green Bay Rd	Washington St	Lake	T-1A
162	08	TS7040	IL 131 (Green Bay Rd)	Yorkhouse Rd	Lake	T-1A
163	08	TS7045	IL 131 (Green Bay Rd)	10th St	Lake	T-1A
164		TS7048	IL 173 (Rosecrans Rd)	Hunt Club Rd	Lake	T-1A
165		TS7049	IL 131 (Green Bay Rd)	21st St	Lake	T-1A
166		TS7050	IL 131 (Green Bay Rd)	IL 173 (Rosecrans Rd / 17th St)	Lake	T-1A
167		TS7054	IL 131 (Green Bay Rd)	Russell Rd	Lake	T-1A
168	08	TS7055	IL 132 (Grand Ave)	Great America Entrance / Lawson Blvd	Lake	T-1A
169	08	TS7060	IL 132 (Grand Ave)	Hunt Club Rd	Lake	T-1A
170	08	TS7062	IL 132 (Grand Ave)	Brookside Dr	Lake	T-1A
171	08	TS7065	IL 132 (Grand Ave)	Oplaine Rd	Lake	T-1A
172	08	TS7070	IL 132 (Grand Ave)	Sand Lake Rd	Lake	T-1A
173	08	TS7075	IL 132 (Grand Ave)	Granada Blvd / Lindenhurst Dr	Lake	T-1A
174	08	TS7080	IL 132 (Grand Ave)	Deep Lake Rd	Lake	T-1A
175	08	TS7081	IL 132 (Grand Ave)	Munn Rd	Lake	T-1A
176	08	TS7085	IL 132 (Grand Ave)	Dilleys Rd	Lake	T-1A
177	08	TS7090	IL 134 (Long Lake Rd)	Fairfield Rd	Lake	T-1A
178		TS7094	IL 137 (Buckley Rd)	Butterfield Square	Lake	T-1A
179		TS7095	IL 137 Buckley Rd	Butterfield Rd	Lake	T-1A
180	08	TS7100	IL 137 (Buckley Rd)	Meridian Dr	Lake	T-1A
181	08	TS7105	IL 137 (Buckley Rd)	Oplaine Rd	Lake	T-1A
182	08	TS7110	IL 137 (Buckley Rd)	St Marys Rd	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

183	08	TS7115	IL 137 (Buckley Rd)	Great Lakes Dr	Lake	T-1A
184	08	TS7120	IL 137 (Buckley Rd)	Mississippi St	Lake	T-1A
185	08	TS7125	IL 137 (Buckley Rd)	Abbott Labs Gate # 3	Lake	T-1A
186		TS7129	IL 173	Savage Deercrest	Lake	T-1A
187	07	TS7130	IL 173	Deep Lake Rd	Lake	T-1A
188	08	TS7132	IL 173 (Rosecrans Rd)	Delaney Rd	Lake	T-1A
189	08	TS7135	IL 176 (Slocum Lake Rd)	Darrell Rd	Lake	T-1A
190	08	TS7137	IL 176 (Slocum Lake Rd)	Westridge Dr	Lake	T-1A
191	08	TS7139	IL 176 (Slocum Lake Rd)	Beech St / Eastway Dr	Lake	T-1A
192	07	TS7140	IL 176 (Wauconda Rd)	Fairfield Rd	Lake	T-1A
193	07	TS7142	IL 176 (Ivanhoe Rd)	Gilmer Rd	Lake	T-1A
194	07	TS7145	IL 176 (Park Ave)	Midlothian Rd	Lake	T-1A
195	07	TS7150	IL 176 (Wauconda Rd)	Old Rand Rd / Main St	Lake	T-1A
196	07	TS7152	IL 176 (Liberty St)	Lakrdale Row	Lake	T-1A
197	08	TS7160	IL 137 (Buckley Rd)	Lewis Ave	Lake	T-1A
198	08	TS7170	IL 137 (Buckley Rd)	Illinois St	Lake	T-1A
199	08	TS7175	IL 137 (Buckley Rd)	Ray St	Lake	T-1A
200	08	TS7190	IL 137 (Sheridan Rd)	Beach Rd	Lake	T-1A
201	08	TS7200	IL 137 (Sheridan Rd)	Yorkhouse Rd	Lake	T-1A
202	08	TS7820	IL 131 (Green Bay Rd)	IL 120 (Belvidere Rd)	Lake	T-1A
203		TS9375	IL Green Bay Rd	14 th St Pulaski	Lake	T-1A
204	07	TS9885	IL 83 (Old McHenry Rd)	Pauline Ave / Town Place Parkway	Lake	T-1A
205	08	TS10661	Sheridan Rd	Old Elm Rd	Lake	T-1A
206	08	TS10665	IL 43 (Waukegan Rd)	Deerpath Rd	Lake	T-1A
207	08	TS10670	IL 43 (Waukegan Rd)	Everett Rd / Old Elm Rd	Lake	T-1A
208	08	TS10675	IL 43 (Waukegan Rd)	Westleigh Rd	Lake	T-1A
209	08	TS10676	IL 43 (Waukegan Rd)	Gloucester Crossing	Lake	T-1A
210	08	TS11115	IL 43 (Waukegan Rd)	Bannockburn Office Entrance	Lake	T-1A
211	08	TS11595	Sheridan Rd	IL 137 (Buckley Rd)	Lake	T-1A
212	08	TS11596	Sheridan Rd	24th St	Lake	T-1A
213	08	TS11597	Sheridan Rd	Farragut Ave	Lake	T-1A
214	08	TS11598	Sheridan Rd	D St	Lake	T-1A
215	08	TS11605	IL 22 (Half Day Rd)	Elm Rd / Oxford Dr	Lake	T-1A
216	08	TS11615	IL 21 (Milwaukee Ave)	Hawthorn Center Dr	Lake	T-1A
217		TS11700	IL 60 (Town Line Rd)	Bradley Rd / Riverwoods Rd	Lake	T-1A
218	08	TS11701	IL 60 (Town Line Rd)	Grainger Woods W Entrance	Lake	T-1A
219		TS11705	IL 60 (Town Line Rd)	I-94 Tollway E Ramps	Lake	T-1A
220		TS11706	IL 60 (Town Line Rd)	I-94 Tollway W Ramps	Lake	T-1A
221		TS11707	IL 60 (Town Line Rd)	Conway Farms	Lake	T-1A
222	08	TS11708	IL 60 (Town Line Rd)	Lake Forest Academy	Lake	T-1A
223	08	TS11875	US 41 (Skokie Highway)	Clavey Rd / Old Skokie Rd	Lake	T-1A
224	08	TS11876	Skokie Valley Rd	Clavey Rd	Lake	T-1A
225	08	TS11877	US 41 (Skokie Highway)	Skokie Valley Rd	Lake	T-1A
226		TS11930	IL 120 (Belvidere Rd)	Hunt Club Rd	Lake	T-1A
227	08	TS11935	IL 22 (Half Day Rd)	Telegraph Rd	Lake	T-1A
228	07	TS11940	IL 59 (Grand Ave)	Wilson Rd / Ridge Ave	Lake	T-1A
229	07	TS11945	US 12	State Park Rd / East St	Lake	T-1A
230	07	TS12120	IL 21 (Milwaukee Ave)	Rockland Rd	Lake	T-1A
231	08	TS12275	US 41 (Skokie Highway)	IL 176 (Rockland Rd) E Ramp	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

232	08	TS12280	US 41 (Skokie Highway)	IL 176 (Rockland Rd) W Ramp/Shagbark	Lake	T-1A
233		TS12285	US 12 (Rand Rd)	Whitney Rd / Northlake Commons Ent	Lake	T-1A
234	07	TS12290	US 12	Eagle Point Rd / Sayton Rd N Junction	Lake	T-1A
235	07	TS12295	US 12 (Rand Rd)	Ela Rd	Lake	T-1A
236	07	TS12297	US 12 (Rand Rd)	June Terrace	Lake	T-1A
237	08	TS12305	US 45	IL 120 (Belvidere Rd)	Lake	T-1A
238	07	TS12315	IL 83 (Baron Blvd)	Washington St	Lake	T-1A
239		TS12317	IL 83 (Baron Blvd)	Brighton Ln	Lake	T-1A
240	08	TS12330	US 45	Winchester Rd	Lake	T-1A
241	08	TS12380	IL 22 (Half Day Rd)	I-94 Tollway E Ramps	Lake	T-1A
242	08	TS12385	IL 22 (Half Day Rd)	I-94 Tollway W Ramps	Lake	T-1A
243	08	TS12390	IL 22 (Half Day Rd)	Ridge Rd E Junction / Willow Rd	Lake	T-1A
244	08	TS12391	IL 22 (Half Day Rd)	Tennyson Ln / Ridge Rd W Junction	Lake	T-1A
245	08	TS12915	IL 43 (Waukegan Rd)	McDonalds Entrance / Cadwells Cr	Lake	T-1A
246	08	TS12920	IL 43 (Waukegan Rd)	Kates Rd	Lake	T-1A
247	08	TS12925	IL 43 (Waukegan Rd)	Longfellow Ave / Osterman Ave	Lake	T-1A
248	08	TS12930	IL 43 (Waukegan Rd)	Deerfield Commons Entrance	Lake	T-1A
249	08	TS12935	IL 43 (Waukegan Rd)	Deerfield Rd	Lake	T-1A
250	08	TS12937	IL 43 (Waukegan Rd)	Deerfield Fire Station	Lake	T-1A
251	08	TS12940	IL 43 (Waukegan Rd)	Hazel Ave / Elder Ln	Lake	T-1A
252	08	TS12945	IL 43 (Waukegan Rd)	Greenwood Ave	Lake	T-1A
253	08	TS12950	IL 43 (Waukegan Rd)	Deerfield High School Entrance	Lake	T-1A
254	08	TS12952	IL 43 (Waukegan Rd)	North Ave	Lake	T-1A
255	07	TS13739	IL 83 (Baron Blvd)	Library Ln	Lake	T-1A
256	08	TS13740	IL 83 (Baron Blvd)	Center St	Lake	T-1A
257	07	TS13741	IL 83 (Baron Blvd)	Frederick Rd	Lake	T-1A
258	08	TS13742	IL 120 (Belvidere Rd)	Lake St / Lake Ave	Lake	T-1A
259		TS13746	IL 120 (Belvidere Rd)	Alleghent Rd	Lake	T-1A
260	07	TS13985	IL 21 (Milwaukee Ave)	Winchester Rd	Lake	T-1A
261	07	TS13990	IL 21 (Milwaukee Ave)	Cook Ave	Lake	T-1A
262	07	TS13995	IL 21 (Milwaukee Ave)	Church St	Lake	T-1A
263	07	TS14005	IL 21 (Milwaukee Ave)	Valley Park Dr	Lake	T-1A
264	07	TS14007	IL 21 (Milwaukee Ave)	Condell Dr	Lake	T-1A
265		TS14013	IL 21 (Milwaukee Ave)	Artaius Parkway S Junction	Lake	T-1A
266	07	TS14015	IL 21 (Milwaukee Ave)	Red Top Dr / Greentree Parkway	Lake	T-1A
267	07	TS14016	IL 21 (Milwaukee Ave)	Adler Park Ent / North Fire Station Ent	Lake	T-1A
268	07	TS14017	IL 21 (Milwaukee Ave)	Golf Rd	Lake	T-1A
269		TS14018	IL 21 Milwaukee Ave	Greggs Pkwy North Artaius	Lake	T-1A
270		TS14020	IL 176 (Park Ave)	Butterfield Rd	Lake	T-1A
271	07	TS14025	IL 176 (Park Ave)	Garfield Ave	Lake	T-1A
272	07	TS14030	IL 176 (Park Ave)	Dawes St	Lake	T-1A
273	07	TS14035	IL 176 (Park Ave)	4th Ave / Wedgemere Ave	Lake	T-1A
274	07	TS14340	US 45 (Lake St)	Diamond Lake Rd / Forest Dr	Lake	T-1A
275	07	TS14345	US 45 (Lake St)	Division St	Lake	T-1A
276	08	TS14350	US 45 (Lake St)	Hawley St	Lake	T-1A
277	07	TS14370	US 45 (Lake St)	Allanson Rd	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

278	07	TS14372	US 45 (Lake St)	Courtland St	Lake	T-1A
279	08	TS14904	IL 43 (Waukegan Rd)	Casimer Pulaski Dr / McGraw Rd	Lake	T-1A
280	08	TS14905	IL 43 (Waukegan Rd)	Lakehurst Rd	Lake	T-1A
281	08	TS14910	IL 43 (Waukegan Rd)	Greenleaf St / Fountain Square Pl	Lake	T-1A
282	08	TS14915	IL 43 (Waukegan Rd)	North Point Blvd	Lake	T-1A
283	08	TS14917	IL 43 (Waukegan Rd)	Lakeside Dr / Baxter Entrance	Lake	T-1A
284	08	TS14925	Greenleaf St	IL 120 (Belvidere Rd) N Ramps	Lake	T-1A
285	08	TS14930	Greenleaf St	IL 120 (Belvidere Rd) S Ramps	Lake	T-1A
286		TS14940	IL 120 Belvidere Rd	Lewis Ave	Lake	T-1A
287		TS14945	IL 120 Belvidere Rd	Glen Rock	Lake	T-1A
288		TS14950	IL 120 Belvidere Rd	Jackson	Lake	T-1A
289		TS14955	IL 120 Belvidere Rd	McCalister	Lake	T-1A
290		TS14960	IL 120 Belvidere Rd	County St	Lake	T-1A
291		TS14965	IL 120 Belvidere Rd	Genesee	Lake	T-1A
292		TS14970	IL 120 Belvidere Rd	Keller	Lake	T-1A
293		TS14972	IL 120 Belvidere Rd	Pioneer Ct Lake Plaza	Lake	T-1A
294		TS14974	IL 120 Belvidere Rd	Belvidere Mall East Ent	Lake	T-1A
295	08	TS15020	IL 131 (Green Bay Rd)	IL 132 (Grand Ave)	Lake	T-1A
296	08	TS15022	IL 131 (Green Bay Rd)	Brookside Ave	Lake	T-1A
297		TS15025	IL 131 (Green Bay Rd)	Sunset Ave (Bonnie Brook Rd)	Lake	T-1A
298		TS15035	Sherdian Rd	Belvidere Rd	Lake	T-1A
299		TS20350	IL 22 (Half Day Rd)	Lakeside Dr	Lake	T-1A
300	08	TS20375	IL 176 (Rockland Rd)	Bradley Rd	Lake	T-1A
301		TS20425	IL 22 (Half Day Rd)	Buffalo Grove Rd	Lake	T-1A
302		TS20426	IL 22 (Half Day Rd)	Buffalo Grove Fire Station Entrance	Lake	T-1A
303		TS20485	IL 131 Green Bay Rd	Crescent Ave	Lake	T-1A
304		TS20530	IL 60 (Town Line Rd)	Saunders Rd / Field Dr	Lake	T-1A
305	07	TS20535	US 12 (Rand Rd)	Pheasant Ridge Rd	Lake	T-1A
306	08	TS20595	US 12 (Rand Rd)	Old McHenry Rd	Lake	T-1A
307	08	TS20995	US 45/IL 21 (Milwaukee Ave)	Riverwalk Dr / Columbus Parkway	Lake	T-1A
308	08	TS21000	IL 132 (Grand Ave)	Gurnee Mills SW Access	Lake	T-1A
309	08	TS21010	IL 137 (Amstutz Expy)	IL 137 (Buckley Rd)	Lake	T-1A
310	07	TS21070	US 45	Evergreen Dr	Lake	T-1A
311		TS21085	IL 137 Sheridan Rd	22 nd St MLK King Dr	Lake	T-1A
312	08	TS21110	IL 132 (Grand Ave)	Gurnee Mills SE Access	Lake	T-1A
313	08	TS21115	IL 132 (Grand Ave)	Gurnee Mills West Ent / Sams Club Ent	Lake	T-1A
314	08	TS21117	IL 132 (Grand Ave)	Almond Rd / Hutchins Rd	Lake	T-1A
315		TS21118	IL 132 (Grand Ave)	Rollings Rd / Oakwood Dr	Lake	T-1A
316	08	TS21119	IL 132 (Grand Ave)	Stonebrook Dr	Lake	T-1A
317	08	TS21120	US 41 (Skokie Highway)	Stearns School Rd	Lake	T-1A
318		TS21181	IL 22 (Half Day Rd)	Main St / Prairie Rd W Junction	Lake	T-1A
319	07	TS21190	IL 59 (Barrington Rd / Lake Shore)	Kelsey Rd	Lake	T-1A
320	08	TS21195	IL 132 (Grand Ave)	Belle Plaine Ave	Lake	T-1A
321		TS21215	IL 22 (Half Day Rd)	Arboretum Way	Lake	T-1A
322	08	TS21260	US 45 (Lake St)	Motorola Parkway	Lake	T-1A
323	07	TS21295	US 12 (Rand Rd)	Miller Rd	Lake	T-1A
324	07	TS21350	IL 59 (Hough Rd)	Cuba Rd	Lake	T-1A
325	08	TS21405	US 45/IL 21 (Milwaukee Ave)	Tower Parkway	Lake	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

326		TS21409	IL 21 (Milwaukee Ave)	American Hotel Dr	Lake	T-1A
327	08	TS21410	IL 21 (Milwaukee Ave)	Corporate Woods Parkway	Lake	T-1A
328	08	TS21411	IL 21 (Milwaukee Ave)	Woodlands Parkway	Lake	T-1A
329		TS21412	IL 21 (Milwaukee Ave)	Jamestown Rd / Port Clinton	Lake	T-1A
330	07	TS21420	US 45 (Lake St)	Dunbar Rd	Lake	T-1A
331	08	TS21490	IL 21 (Milwaukee Ave)	Lake St	Lake	T-1A
332	07	TS21525	IL 22 (Lake Zurich Rd)	Old McHenry Rd	Lake	T-1A
333		TS21543	IL 21 (Milwaukee Ave)	IL 120 (Belvidere Rd) N Ramps	Lake	T-1A
334		TS21544	IL 21 (Milwaukee Ave)	IL 120 (Belvidere Rd) S Ramps	Lake	T-1A
335	08	TS21545	IL 21 (Milwaukee Ave)	Gages Lake Rd	Lake	T-1A
336		TS21547	IL 21 (Milwaukee Ave)	I-94 Tollway exit ramp	Lake	T-1A
337	08	TS21625	IL 134 (Main St)	Hart Rd	Lake	T-1A
338	08	TS21635	IL 83 (Milwaukee Ave)	Petite Lake Rd	Lake	T-1A
339	07	TS21660	US 45	IL 137 (Buckley Rd)	Lake	T-1A
340	08	TS21662	IL 137 (Buckley Rd)	Harris Rd / Casey Rd	Lake	T-1A
341	08	TS21695	IL 43 (Waukegan Rd)	Baxter Entrance / Norman Rd S Junction	Lake	T-1A
342	08	TS21715	IL 43 (Waukegan Rd)	Abbott Labs Gate # 4	Lake	T-1A
343	08	TS21717	IL 43 (Waukegan Rd)	Atkinson Rd	Lake	T-1A
344		TS21755	US 45	Grass Lake Rd	Lake	T-1A
345		TS21756	US 45	Millburn Rd	Lake	T-1A
346		TS21785	US 12 (Rand Rd)	Plum Grove Rd	Lake	T-1A
347	07	TS21940	IL 120 (Belvidere Rd)	Gilmer Rd	Lake	T-1A
348		TS21965	IL 22 (Half Day Rd)	Palazzo Dr / Stevenson HS Entrance	Lake	T-1A
349	08	TS21969	IL 120 (Belvidere Rd)	Mill Rd	Lake	T-1A
350	07	TS21975	US 45 (Lake St)	Townline Square SC Ent / Jewel Entrance	Lake	T-1A
351	08	TS21990	IL 83 (Baron Blvd)	Lake Ave	Lake	T-1A
352	08	TS21991	IL 83 (Milwaukee Ave)	Home Depot Entrance / Millstone Circle	Lake	T-1A
353	08	TS21992	IL 83 (Milwaukee Ave)	Hook Dr / Old Rollins Rd	Lake	T-1A
354		TS21993	IL 83 (Baron Blvd)	Shorewood Rd	Lake	T-1A
355	07	TS22010	IL 120 (Belvidere Rd)	IL 60	Lake	T-1A
356	07	TS22040	IL 59 (Barrinton Rd)	Roberts Rd	Lake	T-1A
357	07	TS22041	IL 59 (Barrinton Rd)	Indian Trail Rd / Essex Pl	Lake	T-1A
358	08	TS22050	IL 21 (Milwaukee Ave)	Market Place Entrance / Continental Dr	Lake	T-1A
359	07	TS22102	IL 120 (Belvedere Rd)	Darrell Rd	Lake	T-1A
360	07	TS22130	IL 59	Devlin Rd	Lake	T-1A
361	07	TS22205	Gilmer Rd	Midlothian Rd	Lake	T-1A
362	08	TS22250	IL 120 (Belvidere Rd)	Fairfield Rd	Lake	T-1A
363	08	TS22255	IL 120 (Belvidere Rd)	Wilson Rd	Lake	T-1A

1	07	TS1236	US 14 (Northwest Highway)	Algonquin Rd	McHenry	T-1A
2	07	TS1237	US 14 (Northwest Highway)	Lincoln Ave	McHenry	T-1A
3		TS1238	US 14 (Northwest Highway)	Foxmoor Rd	McHenry	T-1A
4	07	TS2996	US 14 (Northwest Highway)	Motorola Entrance	McHenry	T-1A
5	07	TS5812	US 14 (Northwest Highway)	Wal Mart Entrance	McHenry	T-1A
6	07	TS7210	US 12	IL 31 / Tyron Grove Rd	McHenry	T-1A
7	07	TS7215	US 12	IL 173	McHenry	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

8	07&08	TS7220	US 12	Fox Lake Rd	McHenry	T-1A
9	07	TS7223	US 12	Wilmot Rd	McHenry	T-1A
10	07	TS7225	US 12	Winn Rd / Johnsbury Spring Grove Rd	McHenry	T-1A
11	07	TS7230	US 14 (Northwest Highway)	IL 22	McHenry	T-1A
12	07	TS7235	US 14 (Northwest Highway)	IL 47 (Eastwood Dr)	McHenry	T-1A
13	07	TS7236	US 14 (Northwest Highway)	Lake Ave	McHenry	T-1A
14	07	TS7237	US 14 (Northwest Highway)	West Lake Shore Dr	McHenry	T-1A
15	07	TS7238	US 14 (Northwest Highway)	Dean St	McHenry	T-1A
16		TS7240	US 14 (Divisin St)	IL 173 WB (Brink St)	McHenry	T-1A
17	07	TS7245	US 14 (Northwest Highway)	West Main St {Cary}	McHenry	T-1A
18	07	TS7246	US 14 (Northwest Highway)	East Main St {Cary}	McHenry	T-1A
19	07	TS7248	US 14 (Northwest Highway)	Cary Square Shopping Center	McHenry	T-1A
20	07	TS7260	US 14 (Northwest Highway)	Three Oaks Rd	McHenry	T-1A
21	07	TS7270	US 14 (Divisin St)	IL 173 EB (Diggins St)	McHenry	T-1A
22	07	TS7275	US 14 (Northwest Highway)	First St	McHenry	T-1A
23	07	TS7280	IL 31 (Main St)	IL 62 (Algonquin Rd)	McHenry	T-1A
24		TS7285	IL 120 (Elm St) W Junction	IL 31 (Front St)	McHenry	T-1A
25	07	TS7288	IL 31 (Front St)	Prime Parkway / Albany St	McHenry	T-1A
26	07	TS7289	IL 31 (Front St)	Shamrock Ln	McHenry	T-1A
27	07	TS7290	IL 120 (Elm St) E Junction	IL 31 (Richmond Rd)	McHenry	T-1A
28	07	TS7295	IL 31	IL 176 (Terra Cotta Ave)	McHenry	T-1A
29	07	TS7296	IL 176 (Crystal Lake Rd)	Valley View Rd	McHenry	T-1A
30	07	TS7300	IL 31 (Front St)	Bull Valley Rd / Charles J Miller Rd	McHenry	T-1A
31	07	TS7305	IL 31	Crystal Lake Ave	McHenry	T-1A
32	07	TS7310	IL 31 (Barnard Mill Rd)	Johnsbury Rd	McHenry	T-1A
33	08	TS7315	IL 31	Three Oaks Rd	McHenry	T-1A
34		TS7320	IL 47	Algonquin Rd (in Huntley)	McHenry	T-1A
35		TS7322	IL 47	Reed Rd	McHenry	T-1A
36	07	TS7323	IL 47 (Eastwood Dr)	McConnell Rd	McHenry	T-1A
37	07	TS7325	IL 47 (Eastwood Dr)	Lake Ave	McHenry	T-1A
38		TS7330	IL 47	Main St (in Huntley)	McHenry	T-1A
39	07	TS7335	IL 120 (Elm St)	Chapel Hill Rd	McHenry	T-1A
40	07	TS7340	IL 120 (Elm St)	River Rd	McHenry	T-1A
41	07	TS7342	IL 120	Thompson Rd	McHenry	T-1A
42		TS7345	IL 120	East Wonder Lake Rd / Ridge Rd	McHenry	T-1A
43	07	TS7740	IL 176 (Crystal Lake Rd)	River Rd	McHenry	T-1A
44	07	TS7741	IL 176 (Crystal Lake Rd)	Newport Ct	McHenry	T-1A
45		TS7795	IL 62 (Algonquin Rd)	Eastgate Dr	McHenry	T-1A
46	07	TS7797	IL 31 (Main St)	Huntington Dr	McHenry	T-1A
47	07	TS7996	IL 31 (Main St)	Edgewood Dr	McHenry	T-1A
48		TS11580	IL 62 (Algonquin Rd)	Harrison St	McHenry	T-1A
49	07	TS11880	IL 176	Roberts Rd	McHenry	T-1A
50	07	TS11885	IL 31(Richmond Rd)	Pearl St	McHenry	T-1A
51	07	TS11890	IL 31 (Front St)	Lillian St / Grove Ave	McHenry	T-1A
52		TS11895	IL 31 (Richmond Rd)	McCullom Lake Rd	McHenry	T-1A
53		TS11896	IL 31 (Richmond Rd)	Diamond Dr	McHenry	T-1A
54	07	TS11897	IL 31 (Richmond Rd)	Blake Rd	McHenry	T-1A
55		TS11900	IL 120 (Elm St)	Ringwood Rd / Curran Rd	McHenry	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

56		TS11905	IL 120 (Elm St)	Meadow Ln	McHenry	T-1A
57		TS11910	IL 120 (Elm St)	Industrial Dr / Oak Dr	McHenry	T-1A
58		TS11915	IL 120 (Elm St)	Crystal Lake Rd	McHenry	T-1A
59	07	TS11920	IL 120 (Elm St)	Green St	McHenry	T-1A
60	07	TS11925	IL 120 (Elm St)	Riverside Dr	McHenry	T-1A
61		TS12170	IL 62 (Algonquin Rd)	Algonquin Town Center Shopping Center	McHenry	T-1A
62	07	TS15080	Russel Ct	IL 47 (Seminary Ave)	McHenry	T-1A
63	07	TS15087	IL 47 (Eastwood Ave)	Irving Ave	McHenry	T-1A
64	07	TS15088	IL 47 (Eastwood Ave)	IL 120 (McHenry Ave)	McHenry	T-1A
65		TS15089	IL 120 (McHenry Ave)	Raffel Rd	McHenry	T-1A
66	07	TS20913	US 14 (Division St)	Crowley Rd	McHenry	T-1A
67	07	TS21240	IL 47	IL 176 S Junction	McHenry	T-1A
68	07	TS21241	IL 47	IL 176 N Junction	McHenry	T-1A
69	07	TS21460	US 14 (Division St)	Airport Rd / McGuire Rd	McHenry	T-1A
70	07	TS21463	US 14 (Division St)	IL 23	McHenry	T-1A
71	07	TS21470	US 14 (Northwest Highway)	Kishwaukee Valley Rd	McHenry	T-1A
72	08	TS21640	IL 62 (Algonquin Rd)	Sandbloom Rd / Countryside Dr	McHenry	T-1A
73	07	TS21815	US 14 (Northwest Highway)	Jandus Cutoff / Lake Julian Ln	McHenry	T-1A
74	07	TS21970	US 20 (Grant Highway)	IL 23 (State St)	McHenry	T-1A
75	07	TS21971	IL 23 (State St)	IL 176 (Telegraph St)	McHenry	T-1A
76	07	TS22100	IL 120 (Rand Rd)	Lily Lake Rd	McHenry	T-1A
77		TS22155	IL 31	James R Rakow Rd	McHenry	T-1A
78	08	TS22156	IL 31	Virginia St	McHenry	T-1A
79	08	TS22157	IL 31	Klasen Rd	McHenry	T-1A
80	07	TS22220	US 14 (Northwest Highway)	Algonquin-Cary Rd / Silver Lake Rd	McHenry	T-1A
81	07	TS22242	County Line Rd	Haegers Bend Rd	McHenry	T-1A
82	07	TS22245	IL 62 (Algonquin Rd)	County Line Rd	McHenry	T-1A

1	06	TS452	US 30 (Lincoln Highway)	Gougar Rd	Will	T-1A
2		TS924	IL 1 (Main St)	Crete Monee Rd	Will	T-1A
3		TS1084	IL 113	IL 129 & IL 53	Will	T-1A
4	06	TS4290	US 30 (Plainfield Rd)	Larkin Ave	Will	T-1A
5	06	TS4295	IL 7 (Larkin Ave)	Theodore St	Will	T-1A
6	06	TS4730	IL 7 (Larkin Ave)	Hillcrest Shopping Center Entrance	Will	T-1A
7		TS6385	IL 59	Caton Farm Rd	Will	T-1A
8	06	TS7350	Weber Rd	Normantown Rd / Budler Rd	Will	T-1A
9	06	TS7352	I-55	Weber Rd S Ramps	Will	T-1A
10	06	TS7354	I-55	Weber Rd N Ramps	Will	T-1A
11	06	TS7385	I-80	Richards St N Ramp	Will	T-1A
12		TS7386	US 52 (North St)	Manhattan Rd / Foxford Dr	Will	T-1A
13	06	TS7390	I-80	Richards St S Ramp	Will	T-1A
14	06	TS7395	US 30 (Lincoln Highway)	I-80 E Ramps	Will	T-1A
15	06	TS7400	US 30 (Lincoln Highway)	I-80 W Ramps	Will	T-1A
16	06	TS7405	US 6 (Channahon Rd)	IL 7 (Larkin Ave/Belt Line Rd)	Will	T-1A
17	06	TS7410	US 6 (Maple Rd)	Walnut St / Draper Ave	Will	T-1A
18	06	TS7411	US 45 (96th Ave)	Lincoln Way Ln	Will	T-1A
19		TS7412	US 45 (96th Ave)	Laraway Rd	Will	T-1A
20	06	TS7413	US 45 (96th Ave)	Nebraska St	Will	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

21		TS7414	IL 45 (96th Ave)	Old Frankfort Way	Will	T-1A
22	06	TS7415	US 30 (North St / Lincoln Highway)	US 45 (96th Ave)	Will	T-1A
23	06	TS7416	US 30 (North St / Lincoln Highway)	Elsner Rd	Will	T-1A
24		TS7418	US 30	Pfeiffer Dr	Will	T-1A
25	06	TS7420	US 30 Lincoln Hwy	IL 7 (Theodore St)	Will	T-1A
26		TS7425	US 30 Lincoln Hwy	IL 59 Division St	Will	T-1a
27	06	TS7430	US 30 (Plainfield Rd)	Caton Farm Rd / Gaylord Rd	Will	T-1A
28		TS7431	US 6 (Southwest Hwy)	I 355 Tlwy W Ramps	Will	T-1A
29		TS7432	US 6 (Southwest Hwy)	I 355 Tlwy E Ramps	Will	T-1A
30		TS7433	US 6 (Southwest Hwy)	Cedar	Will	T-1A
31	06	TS7435	US 30 (Maple Ave)	Cedar Rd	Will	T-1A
32		TS7437	US 30 (Lincoln Highway)	Prairie Dr	Will	T-1A
33	06	TS7440	US 30 (Maple Ave)	Nelson Rd	Will	T-1A
34	06	TS7445	US 30 (Cass St)	Walnut St	Will	T-1A
35	06	TS7450	US 30 (Lincoln Highway)	Washington St	Will	T-1A
36	06	TS7455	US 30 (Maple Ave)	Vine St	Will	T-1A
37	06	TS7460	US 30 (Cass St)	Briggs St	Will	T-1A
38	06	TS7465	US 30 (Maple Ave)	Vine St / Old New Lenox Rd	Will	T-1A
39	06	TS7470	US 30 (Joliet Rd)	Renwick Rd / Brown St	Will	T-1A
40		TS7472	US 30	Lily Cache	Will	T-1A
41		TS7474	IL 59 Division St	Renwick Rd	Will	T-1A
42		TS7480	US 45 (LaGrange Rd / 96th Ave)	191st St	Will	T-1A
43		TS7482	US 45 (LaGrange Rd / 96th Ave)	I-80 S Ramps	Will	T-1A
44		TS7483	US 45 (LaGrange Rd / 96th Ave)	I-80 N Ramps	Will	T-1A
45	06	TS7485	US 45 (LaGrange Rd / 96th Ave)	195th St / Willow Ln	Will	T-1A
46	06	TS7490	US 52 (Doris Ave)	IL 53 (Chicago St)	Will	T-1A
47	06	TS7495	US 52 (Jefferson St)	IL 59 (Brook Forest Ave)	Will	T-1A
48	06	TS7496	US 52 (Jefferson St)	Brookshore Dr	Will	T-1A
49		TS7497	US 52 (Jefferson St)	River Rd	Will	T-1A
50		TS7500	IL 1 Main St (In Crete)	Exchange St	Will	T-1A
51		TS7503	IL 1 (Dixie Highway)	Church Rd	Will	T-1A
52	06	TS7505	IL 1 (Dixie Highway)	Indiana Ave / 303rd St	Will	T-1A
53	06	TS7510	IL 7/IL 53 (Broadway St)	IL 7 (Renwick Rd)	Will	T-1A
54	06	TS7515	IL 7/IL 53 (Broadway St)	IL 7 (Theodore St)	Will	T-1A
55	06	TS7520	IL 7 (159th St)	Bell Rd W Junction	Will	T-1A
56	06	TS7525	IL 7 (159th St)	Cedar Rd	Will	T-1A
57		TS7529	IL 7 (159 th St)	Adelman	Will	T-1A
58	06	TS7530	IL 7 (Larkin Ave)	Moen Ave	Will	T-1A
59		TS7532	IL 7 (Larkin Ave)	Meadow Ave	Will	T-1A
60	06	TS7535	IL 7 (Theodore St)	Arbor Ln / Crest Dr	Will	T-1A
61	06	TS7540	IL 7 (Larkin Ave)	North Ridge Plaza Drive	Will	T-1A
62	06	TS7545	IL 7/IL 53)Broadway St)	Stateville Rd / Division St / 16th St	Will	T-1A
63	06	TS7550	IL 50 (Cicero Ave)	Governors Highway	Will	T-1A
64	06	TS7555	IL 53 (Baltimore St)	IL 102 (Water St)	Will	T-1A
65	06	TS7560	IL 53 (Broadway St)	Airport Rd	Will	T-1A
66	06	TS7565	IL 53 (Independence Ave)	Joliet Rd	Will	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

67	06	TS7567	Joliet Rd	Bluff Rd / Donovan Rd	Will	T-1A
68		TS7570	IL 53 (Chicago St)	Laraway Rd	Will	T-1A
69	06	TS7575	IL 53 (Independence Ave)	Normantown Rd / Devonwood Ave	Will	T-1A
70	06	TS7580	IL 53	Kankakee River Dr / Peotone Rd	Will	T-1A
71		TS7585	US 30 IL 59	IL 126 Main St (in Plainfield)	Will	T-1A
72	06	TS7586	US 30 IL 59 (Division St)	Naperville Rd	Will	T-1A
73		TS7587	IL 59 (Division St)	Meijer Ent	Will	T-1A
74		TS7588	IL 59 (Division St)	143rd St / Whiskey Rd	Will	T-1A
75	06	TS7600	IL 102 (Water St)	Kahler Rd	Will	T-1A
76		TS7603	IL 171 Archer Ave	151 st St	Will	T-1A
77	06	TS7605	IL 171 (Archer Ave)	143rd St	Will	T-1A
78	06	TS7607	IL 171 (Archer Ave)	Smith Rd	Will	T-1A
79		TS7608	IL 171	I 355 Tlwy Ramp A SB	Will	T-1A
80		TS7609	IL 171	I 355 Tlwy Ramp D NB	Will	T-1A
81	06	TS7610	IL 171 (Collins St)	Woodruff Rd	Will	T-1A
82	06	TS7615	IL 394	Exchange St	Will	T-1A
83		TS7618	IL 394	Richton Rd	Will	T-1A
84	06	TS7859	IL 53 (Independence Ave)	Honeytree Dr	Will	T-1A
85	06	TS7866	IL 53 (Independence Ave)	Enterprise Dr	Will	T-1A
86	06	TS9105	IL 53 (Independence Ave)	135th St / Romeo Rd	Will	T-1A
87	06	TS9115	IL 53 (Independence Ave)	Belmont Dr	Will	T-1A
88	06	TS9120	IL 53 (Independence Ave)	Murphy Dr	Will	T-1A
89		TS9125	135th St / Romeo Rd	New Ave	Will	T-1A
90		TS9130	IL 53 (Independence Ave)	Taylor Rd	Will	T-1A
91	06	TS11045	US 45 (96th Ave)	Colorado Ave	Will	T-1A
92	06	TS11135	IL 53 (Baltimore St)	1st St	Will	T-1A
93		TS11625	IL 53 (Independence Blvd)	Lewis University	Will	T-1A
94		TS11630	US 45 (96th Ave)	St Francis Rd	Will	T-1A
95	06	TS11950	US 52/IL 53 (Chicago St)	Patterson Rd	Will	T-1A
96		TS11955	US 30 IL 59 Division St	Lockport St	Will	T-1A
97	06	TS12260	I 55	US 6 E Ramps	Will	T-1A
98	06	TS12265	I 55	US 6 W Ramps	Will	T-1A
99		TS12266	US 6 (Eames St)	Tryon St	Will	T-1A
100		TS12267	US 6 (Eames St)	Bluff Rd / Navajo Dr	Will	T-1A
101		TS12268	US 6 (Eames St)	Roberts Rd / Steve Rittof Dr	Will	T-1A
102		TS12269	US 6 (Eames St)	Bell Rd	Will	T-1A
103		TS20561	IL 7 / IL 53	Canton Farm Rd	Will	T-1A
104	06	TS20600	US 6 (Channahon Rd)	Brandon Rd	Will	T-1A
105		TS20968	US 30/ 143rs St	NewYanDuke Rd	Will	T-1A
106		TS20969	IL 126	Drauden Steiner Rd	Will	T-1A
107		TS20970	IL 126 Lockport St	Wallin Dr	Will	T-1A
108		TS20971	IL 126 (Lockport St)	New Van Dyke Rd	Will	T-1A
109		TS20972	US 30 (Lincoln Highway)	135th St	Will	T-1A
110		TS20979	US 30 (Lincoln Highway)	127th St	Will	T-1A
111	06	TS21020	US 6 (Maple Rd)	Briggs St / Fernwood Ave	Will	T-1A
112		TS21134	US 30 (Lincoln Highway)	Retail Dr / Vancina Ln	Will	T-1A
113	06	TS21135	US 30 (Lincoln Highway)	School House Rd/Schmuhl Rd	Will	T-1A
114		TS21393	US 30 (Lincoln Highway)	111th St	Will	T-1A
115	06	TS21435	IL 53 (Chicago Rd)	Manhattan Rd	Will	T-1A

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

116		TS21437	IL 53 (Chicago Rd)	Walter Strawn Dr / East Access Rd	Will	T-1A
117	06	TS21465	IL 59	103rd St	Will	T-1A
118		TS21516	IL 43 (Harlem Ave)	Benton	Will	T-1A
119	06	TS21565	US 45 (LaGrange Rd/96th Ave)	La Porte Rd	Will	T-1A
120	06	TS21570	IL 53 (Chicago St)	Mills Rd	Will	T-1A
121	06	TS21590	Joliet Rd	International Blvd / International Parkway	Will	T-1A
122	06	TS21820	I-80 N Ramp	IL 53 (Chicago St)	Will	T-1A
123	06	TS21825	US 6/US 52 (McDonough St)	IL 53 (Chicago St)	Will	T-1A
124	06	TS21860	IL 59	111th St	Will	T-1A
125	06	TS21861	IL 59	Royal Worthington Dr	Will	T-1A
126		TS21862	IL 59	127th St	Will	T-1A
127		TS21863	IL 59	119th St	Will	T-1A
128		TS21864	IL 59	135th St	Will	T-1A
129	06	TS21880	US 6 (Channahon Rd)	Caterpillar Center Dr / Johns Manville Ent	Will	T-1A
130	06	TS21881	US 6 (Channahon Rd)	Caterpillar E Dr	Will	T-1A
131	06	TS21882	US 6 (Channahon Rd)	Empress Casino Entrance	Will	T-1A
132	06	TS21883	US 6 (Eames St)	McClintock Rd	Will	T-1A
133		TS21893	IL 59	Cantore Rd	Will	T-1A
134		TS21895	IL 59	95th St / Wolfs Crossing Rd	Will	T-1A
135	06	TS21900	US 6 (Channahon Rd)	Empress Rd	Will	T-1A
136	06	TS21925	Houbolt Rd	I-80 N Ramps	Will	T-1A
137	06	TS21926	Houbolt Rd	I-80 S Ramps	Will	T-1A
138		TS22055	IL 43 (Harlem Ave)	St Francis Rd	Will	T-1A
139	06	TS22180	US 52 (Jefferson St)	I 55 E Ramps	Will	T-1A
140	06	TS22185	US 52 (Jefferson St)	I 55 W Ramps	Will	T-1A
141	06	TS22191	US 52 (Jefferson St)	I 55 East Frontage Rd	Will	T-1A
142		TS75111	IL 7 (159 th St)	I 355 Tlwy W Ramp	Will	T-1A
143		TS75112	IL 7 (150 th St)	I 355 Tlwy E Ramp	Will	T-1A

1		TS78	US 12/20/45 (Mannheim Rd)	Gladys Ave	Cook	T-1B
2		TS1414	US 30 (Lincoln Highway)	Center Ave	Cook	T-1B
3		TS1650	US 45 (LaGrange)	143 rd St	Cook	T-1B
4		TS1668	US 45 (LaGrange)	156 th St Lowes Ent	Cook	T-1B
5		TS2690	IL 56 (Butterfield Rd)	Washington Blvd	Cook	T-1B
6		TS2817	IL 58 (Golf Rd)	Continental Towers / Wal Mart Entrance	Cook	T-1B
7		TS3320	IL 72 (Higgins Rd)	Gabrieski Dr / Air Force Reserve Dr	Cook	T-1B
8		TS3519	Thorton Lansing Rd	Stony Island Ave / Volbrech Rd	Cook	T-1B
9		TS4040	135th St	Central Ave	Cook	T-1B
10		TS5127	IL 394 E Ramp	Glenwood Dyer Rd	Cook	T-1B
11		TS5128	IL 394 W Ramp	Glenwood Dyer Rd	Cook	T-1B
12		TS8770	111th St	Oketo Ave	Cook	T-1B
13		TS11723	183rd St	Central Ave	Cook	T-1B
14	10	TS11815	IL 171 (Archer Ave)	123rd St / McCarthy Rd	Cook	T-1B
15		TS14183	5 th Ave	Main St Charles (In Maywood)	Cook	T-1B
16		TS14861	IL 171 (Archer Ave)	Derby Rd	Cook	T-1B
17	10	TS14863	123rd St / McCarthy Rd	Derby Rd	Cook	T-1B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

18		TS21500	IL 83 (Glenwood Dyer Rd)	Burnham Ave	Cook	T-1B
19		TS21523	143rd St	Will-Cook Rd	Cook	T-1B
1		TS992	IL 53 (Rohlwing Rd)	Spring Lake Dr / Medinah Dr	DuPage	T-1B
2		TS5985	I-290 East Ramps	US 20 (Lake St)	DuPage	T-1B
3		TS6163	IL 19 (Irving Park Rd)	Catalpa Ave	DuPage	T-1B
4	05	TS6150	IL 19 (Irving Park Rd)	Oleary Dr	DuPage	T-1B
5		TS6366	IL 59 (Sutton Rd)	Smith Rd	DuPage	T-1B
6		TS12373	IL 64 (North Ave)	Atlantic Dr	DuPage	T-1B
7		TS14496	22 nd St	Jorie Blvd / Enterprise Dr	DuPage	T-1B
8	05	TS20333	IL 53 (Bryant Ave)	Spring Ave	DuPage	T-1B
1		TS776	US 20/IL 72 S Junction	IL 47	Kane	T-1B
2		TS777	US 20/IL 72 N Junction	IL 47	Kane	T-1B
3		TS7333	IL 47	Plank Rd	Kane	T-1B
4		TS7336	IL 47	I 90 North Ramp	Kane	T-1B
5		TS7337	IL 47	I 90 South Ramp	Kane	T-1B
6		TS11980	IL 25	Grant St	Kane	T-1B
7		TS21995	IL 25	Dunham	Kane	T-1B
1	07	TS6690	US 45	Rollins Rd	Lake	T-1B
2		TS6790	IL 22 Half Day Rd	Westminster Way Hewitt	Lake	T-1B
3	08	TS6909	IL 60	Peterson Rd	Lake	T-1B
4	08	TS6925	IL 60/IL 83	Midlothian Ave	Lake	T-1B
5	08	TS6943	IL 120 (Belvidere Rd)	Atkinson Rd	Lake	T-1B
6	08	TS6945	IL 83 (Milwaukee Ave)	IL 132 (Grand Ave)	Lake	T-1B
7	08	TS6980	IL 83 (Ivanhoe Rd)	IL 137 (Buckley Rd)	Lake	T-1B
8		TS7053	IL 173	Kenosha	Lake	T-1B
9	08	TS21655	US 45	Gages Lake Rd	Lake	T-1B
10		TS21885	US 45	Arbor Vista Ln	Lake	T-1B
11	08	TS22052	IL 21 (Milwaukee Ave)	Continental Dr	Lake	T-1B
1		TS7329	IL 47	Kreutzer Rd	McHenry	T-1B
2		TS7233	US 14	Ridgefield	McHenry	T-1B
3		TS7239	US 14	Doty Rd	McHenry	T-1B
4	07	TS7313	IL 31	Ringwood Rd	McHenry	T-1B
5		TS15085	County Club Rd	IL 47 (Eastwood Dr)	McHenry	T-1B
6		TS21973	IL 23	Coral Rd / Pleasant Grove Rd	McHenry	T-1B
1		TS7388	New Lenox Rd	Briggs St	Will	T-1B
2		TS7393	I-80 Ramps	Briggs St	Will	T-1B
3		TS7511	IL 7 (159th St)	Gougar Rd	Will	T-1B
4		TS7514	IL 7 (159th St)	Bell Rd	Will	T-1B
5		TS7552	IL 50 (Governors Highway)	Court St	Will	T-1B
6		TS7626	IL 7 (159th St)	Parker Rd	Will	T-1B
7		TS9715	I-55	Arsenal Rd West Ramp	Will	T-1B
8		TS9716	I-55	Arsenal Rd East Ramp	Will	T-1B
9		TS20974	US 30 (Lincoln Highway)	143rd St / Whiskey Rd	Will	T-1B
10		TS7426	IL 59	Fort Beggs	Will	T-1B
11		TS7475	US 30 (Lincoln Highway)	Wolf Rd	Will	T-1B
12		TS7493	IL 59	Seil	Will	T-1B
13		TS7553	I-57	Manhattan Monee Rd East Exit	Will	T-1B
14		TS7554	I-57	Manhattan Monee Rd West Exit	Will	T-1B
15		TS7590	IL 59 Brook Forest	Black Rd	Will	T-1B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

16		TS7593	IL 59	Vertin Blvd / Target Ent	Will	T-1B
17		TS7595	IL 59	Theodore	Will	T-1B

1		FL28	US 12 (Lee St)	Park Pl	Cook	T-2A
2		FL490	107th St	Kean Ave	Cook	T-2A
3		FL566	123rd St (McCarthy Rd)	86th St	Cook	T-2A
4		FL1301	US 20 (Lake St)	Elgin-O'Hare	DuPage	T-2A
5		FL1302	IL 53 (Rohlwing Rd)	Elgin-O'Hare	DuPage	T-2A
6		FL1303	Elgin-O'Hare	US 20 (Lake St)	DuPage	T-2A
7		FL1304	Elgin-O'Hare	IL 53 (Rohlwing Rd) Middle Sign	DuPage	T-2A
8		FL1305	Elgin-O'Hare	IL 53 (Rohlwing Rd) West Sign	DuPage	T-2A
9		FL170	IL 31 (Batavia Ave)	Moosehart Entrance	Kane	T-2A
10		FL190	IL 47	IL 64 (North Ave)	Kane	T-2A
11		FL204	IL 47	Burlington Blacktop	Kane	T-2A
12		FL210	IL 47	Main St {Kaneville}	Kane	T-2A
13		FL221	IL 72	State St	Kane	T-2A
14		FL228	IL 47	Plato Rd	Kane	T-2A
15		FL860	IL 38	Meredith	Kane	T-2A
16		FL10697	IL 72 (Higgins Rd)	Big Timber Rd	Kane	T-2A
17		FL765	IL 132 (Grand Ave)	Fairfield Rd	Lake	T-2A
18		FL1210	US 41 (Skokie Highway)	Between Deerfield Rd & West Park Ave	Lake	T-2A
19		FL1306	IL 137 (Buckley Rd)	IL 137 (Amstutz Expressway)	Lake	T-2A
20		FL825	IL 23	Kishwaukee Valley Rd	McHenry	T-2A
21		FL830	IL 47	IL 173	McHenry	T-2A
22		FL835	IL 47	Charles Rd	McHenry	T-2A
23		FL840	IL 120	Charles Rd	McHenry	T-2A
24		FL851	IL 173	Alden Rd	McHenry	T-2A
25	07	FL855	IL 173	Wilmon Rd	McHenry	T-2A
26		FL16	US 6 (Southwest Highway)	Parker Rd	Will	T-2A
27		FL18	US 6 (Southwest Highway)	Cougar Rd	Will	T-2A
28		FL149	US 45 (LaGrange Rd)	Steger Rd	Will	T-2A
29		FL890	US 45 (LaGrange Rd)	Manhattan Monee Rd	Will	T-2A
30		FL913	IL 50 (Cicero Ave)	Peotone Rd	Will	T-2A
31		FL915	IL 50 (Cicero Ave)	Stuenkel Rd	Will	T-2A
32		FL925	Governors Highway	Stuenkel Rd	Will	T-2A
33		FL930	Manhattan Monee Rd	Cedar Rd	Will	T-2A
34		FL1085	IL 129	Coal City Rd	Will	T-2A
35		FL1086	IL 129	Strip Mine Rd	Will	T-2A
36		FL2515	US 45 (LaGrange Rd)	US 52 (Joliet Rd)	Will	T-2A
37		FL11950	US 52 / IL 53 (Chicago St)	Patterson Rd	Will	T-2A
38		FL895	US 45 IL 52 Main St	Wilmington Peotone Rd	Will	T-2A
1		FL20	I-55	I-294 Tollway N Ramp	Cook	T-2B
2		FL21	US 12 (Lee St)	Park Pl	Cook	T-2B
3		FL22	Kedzie Ave	131st St	Cook	T-2B
4		FL27	I-55	I-294 Tollway	Cook	T-2B
5		FL52	I-290 (Congress Parkway)	Old Chicago Post Office	Cook	T-2B
6		FL53	I-290 (Congress Parkway)	Old Chicago Post Office	Cook	T-2B
7		FL54	I-290 (Congress Parkway)	Drawbridge	Cook	T-2B
8		FL55	I-290 (Congress Parkway)	Drawbridge	Cook	T-2B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

9		FL158	Wolf Rd	151st St	Cook	T-2B
10		FL195	I 80 I 94 EB Right	Torrence Ave	Cook	T-2B
11		FL196	I 80 I 94 EB Left	Torrence Ave	Cook	T-2B
12		FL197	I 80 I 94 WB Right	Torrence Ave	Cook	T-2B
13		FL198	I 80 I 94 WB Left	Torrence Ave	Cook	T-2B
14		FL330	US 14 (Northwest Highway)	IL 68 (Dundee Rd)	Cook	T-2B
15		FL332	US 14 (Northwest Highway)	UP RR / CN RR	Cook	T-2B
16		FL335	US 14 (Miner St)	Des Plaines River Rd	Cook	T-2B
17		FL480	87th St	Southwest Highway	Cook	T-2B
18		FL530	Ashland Ave / Wood St	140th St	Cook	T-2B
19		FL531	140th St	Ashland Ave	Cook	T-2B
20		FL590	Palatine Frontage EB	Wheeling (East of)	Cook	T-2B
21		FL591	Palatine Frontage WB	Wolf (West of)	Cook	T-2B
22		FL595	Sheridan Rd	Burnham Pl	Cook	T-2B
23		FL600	Sheridan Rd	Main St	Cook	T-2B
24		FL601	Sheridan Rd	Main St NB	Cook	T-2B
25		FL1008	123 RD WB McCarthy Rd	Walker Rd	Cook	T-2B
26		FL1009	123 rd EB McCarthy Rd	Walker Rd	Cook	T-2B
27		FL1123	IL 83 (Cal Sag Rd)	Ridgeland Ave NB	Cook	T-2B
28		FL1140	US 12/20/45 (Mannheim Rd)	Canterbury / Waterford	Cook	T-2B
29		FL1141	Grand Ave EB Near Right	Elmwood Park (Metra) RR Crossing	Cook	T-2B
30		FL1142	Grand Ave EB Far Right	Elmwood Park (Metra) RR Crossing	Cook	T-2B
31		FL1143	Grand Ave WB Near Right	Elmwood Park (Metra) RR Crossing	Cook	T-2B
32		FL1144	Grand Ave WB Far Right	Elmwood Park (Metra) RR Crossing	Cook	T-2B
33		FL1151	IL 59 SB Near	Lake Cook Rd (North of)	Cook	T-2B
34		FL1152	IL 59 SB Far	Lake Cook Rd (North of)	Cook	T-2B
35		FL1153	Lake Cook Rd WB Near	IL 59 (East of)	Cook	T-2B
36		FL1154	Lake Cook Rd WB Far	IL 59 (East of)	Cook	T-2B
37		FL1222	US 12/20/45 (LaGrange Rd) NB	Weeping Willow Rd	Cook	T-2B
38		FL1223	US 12/20/45 (LaGrange Rd) SB	Weeping Willow Rd	Cook	T-2B
39		FL1251	IL 43 (Waukegan Rd)	Volts Rd	Cook	T-2B
40		FL1290	203 rd	Crawford NB	Cook	T-2B
41		FL1291	203 rd	Crawford SB	Cook	T-2B
42		FL1295	US 14 (Northwest Hwy) WB	Seegers Rd / Broadway	Cook	T-2B
43		FL1296	US 14 (Northwest Hwy) WB Left Side	Seegers Rd / Broadway	Cook	T-2B
44		FL1297	Wolf Rd NB	Camp McDonald Rd	Cook	T-2B
45		FL1298	Oakton St EB	IL 83 (Busse Rd)	Cook	T-2B
46		FL1300	US 14 (Northwest Hwy) EB Minor St	Cumberland Parkway / Metra Dr	Cook	T-2B
47		FL1320	US 20 (Lake St)	Bluff City Blvd	Cook	T-2B
48		FL1321	US 20 (Lake St)	Barrington Rd	Cook	T-2B
49		FL1471	US 34 (Ogden Ave)	W of Joliet Pl	Cook	T-2B
50		FL1472	US 34 (Ogden Ave)	Leland Ave	Cook	T-2B
51		FL1825	IL 1 (Halsted St)	171 st St NB	Cook	T-2B
52		FL2620	IL 50 (Cicero Ave)	Southwest Highway	Cook	T-2B
53		FL2690	IL 56 (Butterfield Rd)	Washington Blvd	Cook	T-2B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

54		FL2760	IL 58 (Golf Rd) WB	Gannon Dr	Cook	T-2B
55		FL2761	IL 58 (Golf Rd) EB	Gannon Dr	Cook	T-2B
56		FL3150	IL 62 (Algonquin Rd)	Bateman Rd	Cook	T-2B
57		FL3151	IL 62 (Algonquin Rd)	Bateman Rd	Cook	T-2B
58		FL3160	IL 68 (Dundee Rd) WB	Old Sutton Rd	Cook	T-2B
59		FL3161	IL 68 (Dundee Rd) EB	Old Sutton Rd	Cook	T-2B
60		FL3162	IL 68 (Dundee Rd)	Old Sutton Rd SB	Cook	T-2B
61		FL3163	IL 68 (Dundee Rd)	Old Sutton Rd NB	Cook	T-2B
62		FL3168	IL 68 (Dundee Rd)	Sterling Ave	Cook	T-2B
63		FL3300	IL 72 (Higgins Rd) EB	East of Canfield	Cook	T-2B
64		FL3325	IL 72 (Higgins Rd) WB	Gannon Dr	Cook	T-2B
65		FL3326	IL 72 (Higgins Rd) EB	Gannon Dr	Cook	T-2B
66		FL3555	IL 171 (Archer Ave)	55th St EB	Cook	T-2B
67		FL3556	IL 171 (Archer Ave)	55th St EB	Cook	T-2B
68		FL3357	IL 171 (Archer Ave)	55th St WB	Cook	T-2B
69		FL3558	IL 171 (Archer Ave)	55th St WB	Cook	T-2B
70		FL3575	IL 171 (Archer Ave)	47th St E Ramp NB	Cook	T-2B
71		FL3936	Crawford Ave / Pulaski Rd	123rd St NB	Cook	T-2B
72		FL4034	135th St EB	W of Ridgeland Ave	Cook	T-2B
73		FL4036	135th St WB	W of Ridgeland Ave	Cook	T-2B
74		FL4660	IL 59 NB	West Bartlett Rd	Cook	T-2B
75		FL5240	Francisco	Broadway	Cook	T-2B
76		FL5930	Willow Rd	Old Willow Rd (west of)	Cook	T-2B
77		FL9670	IL 83 (Elmhurst Rd) NB	Lincoln St	Cook	T-2B
78		FL9671	IL 83 (Elmhurst Rd) SB	Lincoln St	Cook	T-2B
79		FL9726	147 th ST	Oak Park Justamere NB	Cook	T-2B
80		FL11245	US 12/45 (Lee St)	US 12 45 (Manheim Rd) WB	Cook	T-2B
81		FL11246	US 12 45 Lee St	US 12 45 (Mannheim Rd) NB	Cook	T-2B
82		FL11715	Western Ave	Sauk Trail Rd WB	Cook	T-2B
83		FL11720	IL 50 (Cicero Ave)	175th St	Cook	T-2B
84		FL11725	Dixie Highway	Flossmoor Rd / Cambridge Ave	Cook	T-2B
85		FL11744	IL 394	Sauk Trail SB Median	Cook	T-2B
86		FL11745	IL 394 Ford Right side	Sauk Trail Rd SB	Cook	T-2B
87		FL11750	US 6 (159th St) EB	Park Ave Left Side	Cook	T-2B
88		FL11751	US 6 (159th St) WB	Park Ave Right Side	Cook	T-2B
89		FL11755	Ashland Ave / Wood St	Thronton Blue Island Rd	Cook	T-2B
90		FL11760	US 12/20 (95th St)	76th Ave SB to WB	Cook	T-2B
91		FL11765	US 12/20 (95th St)	88th Ave EB	Cook	T-2B
92		FL11770	Southwest Highway NEB	Ridgeland Ave	Cook	T-2B
93		FL11870	IL 72 (Higgins Rd)	Lee St Trammer Crow SB	Cook	T-2B
94		FL12015	IL 56 (Butterfield Rd)	Taft Ave EB	Cook	T-2B
95		FL12025	Lawrence Ave	25th Ave / Ruby Ave EB	Cook	T-2B
96		FL20405	IL 21 (Milwaukee Ave)	US 45 (Des Plaines River Rd)	Cook	T-2B
97		FL21475	IL 171 (Archer Ave)	Bell Rd WB	Cook	T-2B
98		FL21476	IL 171 (Archer Ave)	131st St NB Left Side	Cook	T-2B
99		FL21477	IL 171 (Archer Ave)	131st St NB Right Side	Cook	T-2B
100		FL21478	IL 171 (Archer Ave)	131st St SB Left Side	Cook	T-2B
101		FL21479	IL 171 (Archer Ave)	131st St SB Right Side	Cook	T-2B
102		FL33576	IL 171 (Archer Ave)	47th St E Ramp NB	Cook	T-2B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

1		FL587	IL 83 (Kingery Highway)	91st St EB	DuPage	T-2B
2		FL635	IL 59 (Neltner Blvd)	Joliet St	DuPage	T-2B
3		FL640	IL 59 (Neltner Blvd)	Ingaltan Ave	DuPage	T-2B
4		FL1117	IL 38 (Roosevelt Rd)	Garys Mill Rd NB	DuPage	T-2B
5		FL1118	IL 38 (Roosevelt Rd)	Garys Mill Rd SB	DuPage	T-2B
6		FL1165	IL 83 SB	Red Oak St	DuPage	T-2B
7		FL1166	IL 83 NB	Red Oak St	DuPage	T-2B
8		FL1308	US 20 WB	Garden Rd	DuPage	T-2B
9		FL1309	US 20 EB	Garden Rd	DuPage	T-2B
10		FL1310	IL 19 (Irving Pk) WB	Bloomington Rd	DuPage	T-2B
11		FL8853	IL 59 (Neltner Blvd)	Hawthorn Ln SB	DuPage	T-2B
12		FL15100	IL 19 (Irving Park Rd) WB	Wood Dale Rd	DuPage	T-2B
13		FL15101	IL 19 (Irving Park Rd) EB	Wood Dale Rd	DuPage	T-2B
1		FL140	US 20 (Oak St)	Damisch Rd / Store St {Pingree Grove}	Kane	T-2B
2		FL150	US 20 (Oak St)	W of Marshall Rd	Kane	T-2B
3		FL151	US 20 (Oak St)	Marshall Rd	Kane	T-2B
4		FL160	US 20 (Oak St)	1/2 Mi W of Marshall Rd {Pingree Grove}	Kane	T-2B
5		FL171	IL 31 SB	Mooseheart Rd	Kane	T-2B
6		FL172	IL 31 NB	Mooseheart Rd	Kane	T-2B
7		FL173	IL 31	Mooseheart Rd EB	Kane	T-2B
8		FL191	IL 47	IL 64 (North Ave) EB	Kane	T-2B
9		FL201	IL 47 SB	Burlington Blacktop	Kane	T-2B
10		FL203	IL 47 NB	Burlington Blacktop	Kane	T-2B
11		FL211	IL 47 NB	Main St {Kaneville}	Kane	T-2B
12		FL212	IL 47 SB	Main St {Kaneville}	Kane	T-2B
13		FL222	IL 47 NB	Plato Rd Right Side	Kane	T-2B
14		FL223	IL 47 NB	Plato Rd Left Side	Kane	T-2B
15		FL224	IL 47 SB	Plato Rd Left Side	Kane	T-2B
16		FL225	IL 47 SB	Plato Rd Right Side	Kane	T-2B
17		FL754	IL 25 (JFK Memorial Dr) NB	Cherokee Rd / Bolz Rd	Kane	T-2B
18		FL762	IL 72 EB	Randall Rd	Kane	T-2B
19		FL763	IL 72 WB	Randall Rd	Kane	T-2B
20		FL857	IL 38 EB	St. Charles Youth Corrections	Kane	T-2B
21		FL858	IL 38 EB	Meredith	Kane	T-2B
22		FL859	IL 38 WB	Meredith	Kane	T-2B
23		FL10698	IL 72 (Higgins Rd)	Big Timber Rd EB	Kane	T-2B
24		FL10699	IL 72 (Higgins Rd)	Big Timber Rd WB	Kane	T-2B
1		FL100	IL 31 NB	Half Mile Trail	Lake	T-2B
2		FL101	IL 31 SB	Half Mile Trail	Lake	T-2B
3		FL105	IL 31 NB	Edgewood Rd	Lake	T-2B
4		FL106	IL 31 SB	Edgewood Rd	Lake	T-2B
5		FL110	IL 31 NB	Ames Rd	Lake	T-2B
6		FL111	IL 31 SB	Ames Rd	Lake	T-2B
7		FL660	US 12/IL 59	IL 134 (Long Lake Rd)	Lake	T-2B
8		FL661	US 12/IL 59	IL 134 (Long Lake Rd)	Lake	T-2B
9		FL701	IL 53 (Long Grove Rd)	Robert Parker Coffin Rd	Lake	T-2B
10		FL715	IL 59 (Grand Ave)	Monaville Rd	Lake	T-2B
11		FL716	IL 59 (Grand Ave)	Monaville Rd SB	Lake	T-2B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

12		FL727	IL 60 (Town Line Rd)	Lake Forest Academy Rd	Lake	T-2B
13		FL740	IL 120 (Belvidere Rd)	Almond LakeS	Lake	T-2B
14		FL741	IL 120 (Belvidere Rd) WB	Almond Rd	Lake	T-2B
15		FL748	IL 120 (Belvidere Rd) WB S	Bacon Rd	Lake	T-2B
16		FL749	IL 120 (Belvidere Rd) WB	Bacon Rd	Lake	T-2B
17		FL766	US 14 (Northwest Hwy) SEB	Cuba Rd	Lake	T-2B
18		FL767	US 14 (Northwest Hwy) NWB	Cuba Rd	Lake	T-2B
19		FL768	US 14 (Northwest Hwy)	Cuba Rd EB	Lake	T-2B
20		FL769	US 14 (Northwest Hwy)	Cuba Rd WB	Lake	T-2B
21		FL781	IL 173 (Rosecrans Rd) EB	Kilbourne Rd	Lake	T-2B
22		FL782	IL 173 (Rosecrans Rd) WB	Kilbourne Rd	Lake	T-2B
23		FL783	IL 173 (Rosecrans Rd)	Kilbourne Rd NB	Lake	T-2B
24		FL784	IL 173 (Rosecrans Rd)	Kilbourne Rd SB	Lake	T-2B
25		FL967	US 12 (Rand Rd)	Old Rand Rd SB	Lake	T-2B
26		FL998	US 12 NB	Sullivan Lake Rd / Molidor Rd	Lake	T-2B
27		FL999	US 12 SB	Sullivan Lake Rd / Molidor Rd	Lake	T-2B
28		FL1150	US 14 (Northwest Highway)	Berry Rd	Lake	T-2B
29		FL1193	US 12 (Rand Rd) Off Ramp	IL 59 (Barrington Rd)	Lake	T-2B
30		FL1211	US 41 (Skokie Highway)	Deerfield Rd & West Park Ave	Lake	T-2B
31		FL1212	US 41 (Skokie Highway)	West Park Ave NB	Lake	T-2B
32		FL2113	IL 60	Wilson Rd SB	Lake	T-2B
33		FL2116	IL 173 EB	Tiffany Rd	Lake	T-2B
34		FL2117	IL 173 WB	Tiffany Rd	Lake	T-2B
35		FL2118	IL 173	Tiffany Rd SB	Lake	T-2B
36		FL2121	IL 173	Linden Lane	Lake	T-2B
37		FL6625	IL 176 (Maple Ave) WB	US 45 (Lake St)	Lake	T-2B
38		FL6627	US 45	Casey Rd WB	Lake	T-2B
39		FL6628	US 45	Casey Rd EB	Lake	T-2B
40		FL6629	US 45 NB	Casey Rd	Lake	T-2B
41		FL6630	US 45 SB	Casey Rd	Lake	T-2B
42		FL6916	IL 176 (Ivanhoe Rd) EB	Hawley Rd	Lake	T-2B
43		FL6917	IL 176 (Ivanhoe Rd) WB	Hawley Rd	Lake	T-2B
44		FL11945	US 12	State Park Rd / East St	Lake	T-2B
45		FL12315	IL 83 (Baron Blvd) SB	Washington St	Lake	T-2B
46		FL21755	US 45	Grass Lake Rd SB	Lake	T-2B
1		FL752	IL 23 (State Rd) NB	River Rd	McHenry	T-2B
2		FL753	IL 23 (State Rd) SB	River Rd	McHenry	T-2B
3		FL760	IL 23 (State Rd)	River Rd EB	McHenry	T-2B
4		FL761	IL 23 (State Rd)	River Rd WB	McHenry	T-2B
5		FL764	US 12 NB	Sunset	McHenry	T-2B
6		FL836	IL 47 SB	O'Brien Rd / Vander Karr Rd	McHenry	T-2B
7		FL837	IL 47 NB	O'Brien Rd / Vander Karr Rd	McHenry	T-2B
8		FL852	IL 173 EB	Alden Rd	McHenry	T-2B
9		FL853	IL 173 WB	Alden Rd	McHenry	T-2B
10		FL856	IL 173 WB	West of Converse Rd	McHenry	T-2B
11		FL7233	US 14 EB	Ridgefield Rd	McHenry	T-2B
12		FL7234	US 14WB	Ridgefield Rd	McHenry	T-2B
13		FL7239	US 14 EB	Doty (West of)	McHenry	T-2B
14		FL7240	US 14 WB	Doty (West of)	McHenry	T-2B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

15		FL11880	IL 176 (Crystal Lake Rd)	Roberts Rd	McHenry	T-2B
16		FL11881	IL 176 (Crystal Lake Rd) WB	Briarwood	McHenry	T-2B
17		FL11882	IL 176 (Crystal Lake Rd)	Briarwood SB	McHenry	T-2B
18		FL11883	IL 176 (Crystal Lake Rd)	Briarwood NB	McHenry	T-2B
19		FL11884	IL 176 EB	Briarwood	McHenry	T-2B
20		FL11948	US 12	Solon Rd NB	McHenry	T-2B
21		FL11949	US 12	Solon Rd SB	McHenry	T-2B
22		FL21968	US 20 NB	Beck Rd	McHenry	T-2B
23		FL21969	US 20 SB	Beck Rd	McHenry	T-2B
24		FL21970	US 20 NB	South Union Rd	McHenry	T-2B
25		FL21971	US 20	Beck Rd WB	McHenry	T-2B
26		FL21972	US 20	Beck Rd EB	McHenry	T-2B
27		FL21973	US 20 NB	Coral Rd	McHenry	T-2B
28		FL21974	US 20 SB	Coral Rd	McHenry	T-2B
29		FL21976	IL 23 (State St) NB	Coral Rd / Pleasant Grove Rd	McHenry	T-2B
30		FL21977	IL 23 (State St) SB	Coral Rd / Pleasant Grove Rd	McHenry	T-2B
1		FL19	US 6 (Southwest Highway)	Parker Rd EB	Will	T-2B
2		FL23	US 6 (Southwest Highway)	Parker Rd WB	Will	T-2B
3		FL145	US 45 (LaGrange Rd) NB	Steger Rd	Will	T-2B
4		FL146	US 45 (LaGrange Rd) SB	Steger Rd	Will	T-2B
5		FL154	183 rd St EB	Wolf Rd	Will	T-2B
6		FL155	183 rd St WB	Wolf Rd	Will	T-2B
7		FL156	183 rd St	Wolf Rd NB	Will	T-2B
8		FL157	183 rd St	Wolf Rd SB	Will	T-2B
9		FL865	I-80	Wheeler Ave WB	Will	T-2B
10		FL866	I-80	Wheeler Ave EB	Will	T-2B
11		FL900	US 52 (State St)	North St WB	Will	T-2B
12		FL901	US 52 (State St) SB	North St	Will	T-2B
13		FL902	US 52 (State St) NB	North St	Will	T-2B
14		FL905	US 52 (Manhattan Rd)	Laraway Rd	Will	T-2B
15		FL906	US 52 (Manhattan Rd)	Laraway Rd SB	Will	T-2B
16		FL907	US 52 (Manhattan Rd)	Laraway Rd EB	Will	T-2B
17		FL908	US 52 (Manhattan Rd)	Laraway Rd WB	Will	T-2B
18		FL927	IL 53 (Bolingbrook Dr)	Royce Rd	Will	T-2B
19		FL1029	IL 126 SW RS East of RR	East of IL 59	Will	T-2B
20		FL1030	IL 126 SW RS West of RR	East of IL 59	Will	T-2B
21		FL1034	IL 126	Essington Rd WB	Will	T-2B
22		FL1088	IL 129	Strip Mine Rd NB	Will	T-2B
23		FL1089	IL 129	Strip Mine Rd SB	Will	T-2B
24		FL1091	IL 394 SB Left Side	Richton Rd	Will	T-2B
25		FL1092	IL 394 SB Right Side	Richton Rd	Will	T-2B
26		FL1093	IL 394 NB Left Side	Richton Rd	Will	T-2B
27		FL1094	IL 394 NB Right Side	Richton Rd	Will	T-2B
28		FL1096	IL 394 NB Left Side	Burville Rd	Will	T-2B
29		FL1097	IL 394 NB Right Side	Burville Rd	Will	T-2B
30		FL1098	IL 394 SB Left Side	Burville Rd	Will	T-2B
31		FL1099	IL 394 SB Right Side	Burville Rd	Will	T-2B
32		FL1125	I-80	IL 53 (Water St) EB Right Side	Will	T-2B
33		FL1126	I-80	IL 53 (Water St) EB Left Side	Will	T-2B

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

34		FL1127	I-80	IL 53 (Water St) WB Right Side	Will	T-2B
35		FL1128	I-80	IL 53 (Water St) WB Left Side	Will	T-2B
36		FL1131	IL 53 NB	Manhattan Rd	Will	T-2B
37		FL1132	IL 53 NB	Manhattan Rd	Will	T-2B
38		FL1133	IL 53 SB	Manhattan Rd	Will	T-2B
39		FL1134	IL 53 SB	Manhattan Rd	Will	T-2B
40		FL1136	IL 53 NB	New River Rd	Will	T-2B
41		FL1137	IL 53 SB	New River Rd	Will	T-2B
42		FL9126	135th St (Romeo Rd) WB	E of New Ave	Will	T-2B
43		FL11952	US 52 / IL 53 (Chicago St)	Patterson Rd NB	Will	T-2B
44		FL11953	US 52 / IL 53 (Chicago St)	Patterson Rd SB	Will	T-2B
45		FL20600	US 6 (Channahon Rd)	Brandon Rd WB	Will	T-2B

EXTRA SYSTEMS LOCATIONS

Ct	Loc #	Main Route / Address	Nearest Cross St / City	Co	Type of Equipment	RM Pay Item
1	XH290-A	I-290 IB	Ashland Ave	Cook	HAR	X-1
2	XH290-E	I-290 OB	Westchester Blvd	Cook	HAR	X-1
3	XH290-T	I-290 IB	Thorndale Ave	Cook	HAR	X-1
4	XH290-W	I-290OB	Wells St	Cook	HAR	X-1
5	XH55-TW	I-55 IB	I-294	Cook	HAR	X-1
6	XH90-N	I-90 IB	Nagle Ave	Cook	HAR	X-1
7	XH90-TW	I-190 IB	I-294	Cook	HAR	X-1
8	XH94-P	I-94 IB	Pratt Ave	Cook	HAR	X-1
9	XH94-T	I-94 IB	Tower Rd	Cook	HAR	X-1
10	XIB290IB	I-290 IB	Chicago River	Cook	Ice Beacon	X-1
11	XIB290OB	I-290 OB	Chicago River	Cook	Ice Beacon	X-1
12	XIB9094IB	I-90/94 IB	Ohio St	Cook	Ice Beacon	X-1
13	XIB9094OB	I-90/94 OB	Ohio St	Cook	Ice Beacon	X-1
14	XM6105	11801 S Ridgeland Ave	Worth	Cook	Alsip Yard	X-1
15	XM6110	410 E Lincoln Ave	Arlington Heights	Cook	Arlington Heights Yd	X-1
16	XM6115	16915 Van Dam Rd	South Holland	Cook	Bishop Ford Yard	X-1
17	XM6120	6543 S Wentworth Ave	Chicago	Cook	Dan Ryan Yard	X-1
18	XM6125	2 Happ Rd	Northfield	Cook	Edens Yard	X-1
19	XM6130	5201 W Flournoy St	Chicago	Cook	Eisenhower Yard	X-1
20	XM6135	1480 Rodenburg Rd	Schaumburg	Cook	Rodenburg Yd/BS/CC	X-1
21	XM6145	16738 S Lathrop Ave	Harvey	Cook	Harvey Yard	X-1
22	XM6150	East Ave & May St	Hillside	Cook	Hillside Yard/BS	X-1
23	XM6155	1101 Biesterfield Rd	Elk Grove	Cook	District Bridge Office	X-1
24	XM6160	16010 S Crawford Ave	Markham	Cook	I-57 Yard	X-1
25	XM6165	15940 Pulaski Rd	Markham	Cook	Southside Sign Shop	X-1
26	XM6170	5027 N Central Ave	Chicago	Cook	Kennedy Yard	X-1
27	XM6175	1260 W Augusta Blvd	Chicago	Cook	Landscape Yard	X-1
28	XM6180	1916 Techny Rd	Northbrook	Cook	Northbrook Yard	X-1
29	XM6185	7151 Forest Preserve Dr	Chicago	Cook	Northside Sign Shop	X-1
30	XM6190	4051 N Harlem Ave	Chicago	Cook	Northside Yard	X-1
31	XM6195	Joliet Rd & 1st Ave	McCook	Cook	Stevenson Yard	X-1
32	XVAC1	Viaduct Access Control	Governors Hwy & 214th St	Cook	Matteson	X-1

Ct	Loc #	Main Route / Address	Nearest Cross St / City	Co	Type of Equipment	RM Pay Item
33	XVAC2	Viaduct Access Control	Governors Hwy & 219th St	Cook	Matteson	X-1
34	XWS30	US 30 & E of Torrence Ave	Chicago Heights	Cook	Weigh Station	X-1
35	XM6210	28 W 731 Ogden Ave	Naperville	DuPage	Naperville Yard	X-1
36	XM6215	17 W 125 Butterfield Rd	Villa Park	DuPage	Oak Brook Yard	X-1
37	XWS83	IL 83 & St. Charles Rd	Elmhurst	DuPage	Weigh Station	X-1
38	XM6310	595 S State St	Elgin	Kane	Elgin Sign Shop	X-1
39	XM6315	777 S State St	Elgin	Kane	ISP Dist 2	X-1
40	XM6320	38 W 027 IL 38	St. Charles	Kane	St. Charles Yard	X-1
41	XM6325	525 Shales Parkway	Elgin	Kane	Shales Pkwy Storage	X-1
42	XM6410	219 N Baron Blvd	Grayslake	Lake	Grayslake Yard	X-1
43	XM6415	3516 W Washington St	Gurnee	Lake	Gurnee Yard	X-1
44	XM6420	700 S Ela Rd	Lake Zurich	Lake	Lake Zurich Yard	X-1
45	XWS41IB	US 41 & Rosecrans Rd	Rosecrans	Lake	Weigh Station	X-1
46	XWS41OB	US 41 & Wadsworth Rd	Wadsworth	Lake	Weigh Station	X-1
47	XM6505	11916 Catalpa Lane	Woodstock	McHenry	Woodstock Yard	X-1
48	XWS12	US 12 & Burlington Rd	Richmond	McHenry	Weigh Station	X-1
49	XWS14	US 14 & Crowley Rd	Harvard	McHenry	Weigh Station	X-1
50	XBBRAN	Des Plaines River	Brandon St	Will	Bridge Monitoring	X-1
51	XBCASS	Des Plaines River	Cass St	Will	Bridge Monitoring	X-1
52	XBJACK	Des Plaines River	Jackson St	Will	Bridge Monitoring	X-1
53	XBJEFF	Des Plaines River	Jefferson St	Will	Bridge Monitoring	X-1
54	XBMCDN	Des Plaines River	McDonough St	Will	Bridge Monitoring	X-1
55	XBRUBY	Des Plaines River	Ruby St	Will	Bridge Monitoring	X-1
56	XM6605	I-55 & US 6	Minooka	Will	Birds Bridge Yard	X-1
57	XM6610	I-55 S Frontage & E of IL 53	Bolingbrook	Will	I-55 Yard	X-1
58	XM6615	IL 53 & Caton Farm Rd	Lockport	Will	Joliet Yard	X-1
59	XM6620	IL 50 & US 6	Monee	Will	Monee Storage Fac.	X-1
60	XM6625	1400 W Maple St	New Lenox	Will	New Lenox Yard	X-1
61	XM6630	I-80 & US 30	New Lenox	Will	New Lenox Sign Shop	X-1
62	XRI57IB	I-57	Peotone	Will	Rest Area IB	X-1
63	XRI57OB	I-57	Peotone	Will	Rest Area OB	X-1
64	XWS55IB	I-55 & W of IL 53	Bolingbrook	Will	Weigh Station IB	X-1
65	XWS55OB	I-55 & W of IL 53	Bolingbrook	Will	Weigh Station OB	X-1
66	XWS57IB	I-57 & N of US 52	Peotone	Will	Weigh Station IB	X-1
67	XWS57OB	I-57 & N of US 52	Peotone	Will	Weigh Station IB	X-1
68	XWS80IB	I-80 & E of Townline Rd	Frankfort	Will	Weigh Station IB	X-1
69	XWS80OB	I-80 & E of Townline Rd	Frankfort	Will	Weigh Station OB	X-1

PROPOSED LOCATIONS

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Type of Equipment /Cabinet	RM Pay Item
1	ABF0	I-94	Michigan Ave, Tower MMN2	Cook	TM Camera	A-2
2	ABF1	I-94	M L King Dr, Tower MCD3	Cook	TM Camera	A-2
3	ABF10	I-94	Dolton Ave SB	Cook	TM Camera, Wireless	A-2
4	ABF10A	I-94	Dolton Ave NB	Cook	TM Camera, Wireless	A-2
5	ABF11	I-94	170 th St, Tower E11J3	Cook	TM Camera	A-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Type of Equipment /Cabinet	RM Pay Item
6	ABF11A	I-94	NB I-94 ramp, Tower CGH1	Cook	TM Camera	A-2
7	ABF11B	I-80	W of IL 394, Tower CIJ3	Cook	TM Camera	A-2
8	ABF11C	I-94	S of I-80, Tower D1CD4	Cook	TM Camera	A-2
9	ABF12	IL 394	186 th St	Cook	TM Camera, Wireless	A-2
10	ADR2A	I-90/94	Canal St, Sign Y4	Cook	TM Camera	A-2
11	ADR2B	I-90/94	28 th Pl	Cook	TM Camera	A-2
12	ADR3	I-90/94	35 th St, Tower WAB2	Cook	TM Camera	A-2
13	ADR4	I-90/94	45 th St, Tower VMN2	Cook	TM Camera	A-2
14	ADR5	I-90/94	50 th St, Tower UIJ4	Cook	TM Camera	A-2
15	ADR6	I-90/94	58 th St, Tower TGH2	Cook	TM Camera	A-2
16	ADR7	I-90/94	63 th St, Tower SAB1	Cook	TM Camera	A-2
17	ADR7A	I-90/94	67 th St	Cook	TM Camera	A-2
18	ADR8	I-90/94	72 nd St, Tower RKL3	Cook	TM Camera	A-2
19	ADR9	I-90/94	81 st St, Tower POP3	Cook	TM Camera	A-2
20	ADR10	I-90/94	86 th St, Tower PEF5	Cook	TM Camera	A-2
21	ADR10A	I-90/94	90 th St, Tower OCD1	Cook	TM Camera	A-2
22	ADR11	I-90/94	96 th St, Tower OAB2	Cook	TM Camera	A-2
23	AFS0A	I-57	Wentworth, Tower AGH2	Cook	TM Camera	A-2
24	AIK1	I-290	Paulina Ave	Cook	TM Camera	A-2
25	AIK3	I-290	Sacramento Blvd	Cook	TM Camera	A-2
26	AIK4	I-290	Independence Blvd	Cook	TM Camera	A-2
27	AIK6	I-290	Central Ave	Cook	TM Camera	A-2
28	AIK10	I-290	1 st Ave	Cook	TM Camera	A-2
29	AIK11	I-290	25 th Ave	Cook	TM Camera	A-2
30	AIK13	I-290	Mannheim Rd	Cook	TM Camera	A-2
31	AIK14	I-290	I-88/I-290 Split	Cook	TM Camera	A-2
32	AIK21	I-290	Addison Rd	Cook	TM Camera	A-2
33	AKI0	I-80/94	State Line Tower	Cook	TM Camera	A-2
34	AKI0A	I-80/94	W of State Line, Tower AGH9	Cook	TM Camera	A-2
35	AKI0B	I-80/94	W of Wentworth Ave, Tower AGH2	Cook	TM Camera	A-2
36	AKI1	I-80/94	E of Torrence Ave, Tower BGH7	Cook	TM Camera	A-2
37	AKI1A	I-80/94	Torrance Ave, Tower BGH1	Cook	TM Camera	A-2
38	AKI2	IL 394	W of Torrence Ave, Tower DCD4	Cook	TM Camera	A-2
39	AST16	I-55	Wolf Road	Cook	TM Camera, Wireless	A-2
40	ANS1	I-355	Lake St	DuPage	TM Camera	A-2
41	ANS2	I-355	Army Trail Rd	DuPage	TM Camera	A-2
42	AST16A	I-55	West of I-294	DuPage	TM Camera, Wireless	A-2
43	AST17	I-55	Madison @ County Line Rd	DuPage	TM Camera, Wireless	A-2
44	AST18	I-55	W/O County Line Rd	DuPage	TM Camera, Wireless	A-2
45	AST18A	I-55	Madison St (E/O IL 83)	DuPage	TM Camera, Wireless	A-2
46	AST19	I-55	IL 83	DuPage	TM Camera, Wireless	A-2
47	AST20	I-55	Portsmouth Dr	DuPage	TM Camera, Wireless	A-2
48	AST20A	I-55	Cass Ave	DuPage	TM Camera, Wireless	A-2
49	AST22	I-55	E of Lemont Rd	DuPage	TM Camera, Wireless	A-2
50	AST22A	I-55	Lemont Rd	DuPage	TM Camera, Wireless	A-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Type of Equipment /Cabinet	RM Pay Item
51	AST23	I-55	Bet. I 355 & Lemont Rd	DuPage	TM Camera, Wireless	A-2
52	AST24	I-55	I 355	DuPage	TM Camera, Wireless	A-2
53	AST24A	I-55	Joliet Road	Will	TM Camera, Wireless	A-2
54	AST25	I-55	Bet. IL 53 & Joliet Rd	Will	TM Camera, Fiber	A-2
55	AST26	I-55	IL 53	Will	TM Camera, Fiber	A-2
56	AST27	I-55	E of Schimdt Rd	Will	TM Camera, Wireless	A-2
57	AST28	I-55	Weigh Station	Will	TM Camera, Wireless	A-2
58	AST29	I-55	Windham Parkway	Will	TM Camera, Wireless	A-2
59	AST30	I-55	Weber Rd	Will	TM Camera, Wireless	A-2
60	AST30A	I-55	Weber Rd	Will	TM Camera, Wireless	A-2
61	AST31	I-55	Bet. 135 th & Weber Rd	Will	TM Camera, Wireless	A-2
62	AST32	I-55	IL 126	Will	TM Camera, Wireless	A-2
63	AST32A	I-55	IL 126	Will	TM Camera, Wireless	A-2
64	AST34	I-55	Lockport Rd	Will	TM Camera, Wireless	A-2
65	AST35	I-55	Renwick Rd	Will	TM Camera, Wireless	A-2
66	AST35A	I-55	US 30 (EJE RR)	Will	TM Camera, Wireless	A-2
67	AST36	I-55	US 30	Will	TM Camera, Wireless	A-2
68	AST36A	I-55	US 30	Will	TM Camera, Wireless	A-2
69	AST37	I-55	Bet. US30 & Caton Farm Rd	Will	TM Camera, Wireless	A-2
70	AST37A	I-55	Caton Farm Rd	Will	TM Camera, Wireless	A-2
71	AST38	I-55	S of Caton Farm Rd	Will	TM Camera, Wireless	A-2
72	AST39	I-55	N of Black Rd	Will	TM Camera, Wireless	A-2
73	AST40	I-55	N of Jefferson St	Will	TM Camera, Wireless	A-2
74	AST40A	I-55	Jefferson St	Will	TM Camera, Wireless	A-2
75	AST42	I-55	Seil Rd	Will	TM Camera, Wireless	A-2
76	AST43	I-55	I 80	Will	TM Camera, Wireless	A-2
77	AST43A	I-55	I 80	Will	TM Camera, Wireless	A-2
78	AST44	I-55	I 55 Maintenance Yd	Will	TM Camera, Wireless	A-2
79	AST45	I-55	US 6	Will	TM Camera, Wireless	A-2

1	AH55B	I-55	26 th St & Normal Ave	Cook	Hut	A-3
2	AH80	I-80	I-94	Cook	Hut	A-3
3	AH94	I-90/94	State St @ 66 rd St	Cook	Hut	A-3
4	ATLAN	I-80/94	IN. State line, Lansing	Cook	Tower/ Hut	A-3

1	L0499	I-57	Steger Rd	Cook	Z	L-1
2	L0361	I-55	Drummond Rd	Will	T1	L-1
3	L0362	I-55	SB Arsenal Rd Exit	Will	T2	L-1
4	L0363	I-55	NB Arsenal Frontage Rd	Will	A	L-1
5	L0364	I-55	Durkee Rd	Will	A1	L-1
6	L0510	I-57	Steunkel Rd	Will	A	L-1
7	L0515	I-57	Dralle Rd	Will	B	L-1
8	L0535	I-57	Burns Rd	Will	D	L-1
9	L0540	I-57	Pauling Rd	Will	E	L-1

1	L1604	US 12 (Rand Rd)	IL 68 (Dundee Rd)	Cook	XC	L-2
---	-------	-----------------	-------------------	------	----	-----

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Type of Equipment /Cabinet	RM Pay Item
2	L1632	IL 58 (Golf Rd)	I-294 (Tollway)	Cook	XO	L-2
3	L1633	IL 21 (Milwaukee)	I-294 (Tollway)	Cook	XP	L-2
4	L1715	US 34 (Ogden Ave)	39th St (Pershing Rd)	Cook	BV	L-2
5	L1885	US 6 (159th St)	Leavitt St	Cook	CT	L-2
6	L1886	US 6 (159th St)	CN RR Bridge	Cook	CJ	L-2
7	L1937	IL 56 (Butterfield Rd)	Winfield Rd	DuPage	PB	L-2
8	L1942	IL 56 (Butterfield Rd)	22 nd St (Cermak Rd)	DuPage	DP	L-2
9	L1961	IL 64 (North Ave)	IL 53 (Columbine Ave)	DuPage	DF	L-2
10	L1990	IL 64 (North Ave)	Woodland Ave	DuPage	PC	L-2
11	L1991	IL 64 (North Ave)	Powis Rd	DuPage	PD	L-2
12	L1992	IL 64 (North Ave)	Kautz Rd / Smith Rd	DuPage	PE	L-2
13	L2205	IL 22 (Half Day Rd)	I-94 (Tollway)	Lake	LS	L-2
14	L2418	US 30 (Lincoln Hwy)	Cedar Rd	Will	WE	L-2
15	L2437	IL 50 (Cicero Ave)	Court St	Will	WI	L-2

1	L1621	US 41 (Skokie Blvd)	Golf Rd	Cook	XA	L-3
2	L1622	US 41 (Skokie Blvd)	Foster St	Cook	XB	L-3
3	L1631	Ballard Rd	I-294 (Tollway)	Cook	XS	L-3
4	L2433	University Parkway	Home Ave	Will	HA	L-3

1	S6000	I-94 SB	S of I-80 Interchange	Cook	Cabinet	S-2
2	S6005	I-94 NB	S of I-80 Interchange	Cook	Cabinet	S-2
3	S6010	I-94 NB	Torrence Slip to WB I-80	Cook	Cabinet	S-2
4	S6015	I-94 NB	I-80 Interchange	Cook	Cabinet	S-2
5	S6035	I-94 NB	166 th St	Cook	Cabinet	S-2
6	S6040	I-94 NB	163 rd St	Cook	Cabinet	S-2
7	S16000	IL 394 SB	SW Quad I-80/I-94/IL394	Cook	Cabinet	S-2
8	S16005	IL 394 NB	SE Quad I-80/I-94-IL394	Cook	Cabinet	S-2
9	S16010	IL 394 NB	S of Thornton Lansing	Cook	Cabinet	S-2
10	S16020	IL 394 NB	186st St	Cook	Cabinet	S-2
11	S1475	I-55	½ Mile N of Naperville Rd	Will	Cabinet	S-2
12	S1480	I-55	NB Weber Rd	Will	Cabinet	S-2
13	S1485	I-55	SB Weber Rd	Will	Cabinet	S-2
14	S1490	I-55	½ mile S of Weber Rd	Will	Cabinet	S-2
15	S1495	I-55	1 mile S of Weber Rd	Will	Cabinet	S-2
16	S1500	I-55	½ mile N of IL 126	Will	Cabinet	S-2
17	S1505	I-55	NB IL 126	Will	Cabinet	S-2
18	S1510	I-55	SB IL 126 Solar Power RVD	Will	Cabinet	S-2
19	S1525	I-55	½ mile S of IL 126	Will	Cabinet	S-2
20	S1530	I-55	1 mile N of Lockport Rd	Will	Cabinet	S-2
21	S1535	I-55	½ mile N of Lockport Rd	Will	Cabinet	S-2
22	S1540	I-55	S of Lockport Rd	Will	Cabinet	S-2
23	S1545	I-55	1 mile N of US 30	Will	Cabinet	S-2
24	S1550	I-55	½ mile N of US 30	Will	Cabinet	S-2
25	S1555	I-55	NB US 30	Will	Cabinet	S-2
26	S1560	I-55	SB US 30	Will	Cabinet	S-2

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Type of Equipment /Cabinet	RM Pay Item
27	S1565	I-55	½ mile S of US 30	Will	Cabinet	S-2
28	S1570	I-55	½ mile N of Caton Farm Rd	Will	Cabinet	S-2
29	S1575	I-55	Caton Farm Rd	Will	Cabinet	S-2
30	S1580	I-55	½ mile S of Caton Farm Rd	Will	Cabinet	S-2
31	S1586	I-55	DMS 33 Communications	Will	Cabinet	S-2
32	S1590	I-55	1 mile N of Black Rd	Will	Cabinet	S-2
33	S1595	I-55	½ mile N of Black Rd	Will	Cabinet	S-2
34	S1600	I-55	Black Rd	Will	Cabinet	S-2
35	S1605	I-55	½ mile N of US 52	Will	Cabinet	S-2
36	S1610	I-55	NB US 52	Will	Cabinet	S-2
37	S1615	I-55	SB US 52	Will	Cabinet	S-2
38	S1620	I-55	½ mile S of US 52	Will	Cabinet	S-2
39	S1625	I-55	1 mile S of US 52	Will	Cabinet	S-2
40	S1630	I-55	S of IL 59	Will	Cabinet	S-2
41	S1635	I-55	N of I-80	Will	Cabinet	S-2
42	S1640	I-55	S of I-80	Will	Cabinet	S-2
43	S1645	I-55	½ mile S of I-80 RVD	Will	Cabinet	S-2
44	S1650	I-55	N of IL 6 RVD	Will	Cabinet	S-2
45	S1655	I-55	S of US 6	Will	Cabinet	S-2
46	S1661	I-55	DMS 34 Communications	Will	Cabinet	S-2
47	S1665	I-55	½ mile N of Bluff Rd	Will	Cabinet	S-2
48	S1670	I-55	N of Bluff Rd	Will	Cabinet	S-2
49	S1670	I-55	S of Bluff Rd	Will	Cabinet	S-2
50	S1680	I-55	½ mile N of Arsenal Rd	Will	Cabinet	S-2
51	S1685	I-55	Arsenal Rd	Will	Cabinet	S-2
52	S1690	I-55	½ mile S of Arsenal Rd	Will	Cabinet	S-2
53	S1695	I-55	Arsenal Rd Interchange	Will	Cabinet	S-2
54	S1700	I-55	N of Arsenal Rd Interchange	Will	Cabinet	S-2
55	S1705	I-55	½ mile S of Arsenal Rd Inter.	Will	Cabinet	S-2
56	S1710	I-55	1 mile S of Arsenal Rd Inter.	Will	Cabinet	S-2
57	S1715	I-55	1 ½ mile S of Arsenal Rd RVD	Will	Cabinet	S-2
58	S1720	I-55	½ mile N of River Rd RVD	Will	Cabinet	S-2
59	S1725	I-55	River Rd	Will	Cabinet	S-2
60	S1730	I-55	N of Lorenzo Rd	Will	Cabinet	S-2
61	S1735	I-55	S of Lorenzo Rd	Will	Cabinet	S-2
62	S20010	I 90 94 Ryan NB	51 st St ATR	Cook	Cabinet	S-2
63	S20015	I 90 94 Ryan SB	51 st St ATR	Cook	Cabinet	S-2

1	S1113	I 55 Stev SW	.5 mile E of Pulaski	Cook	Sign	S-3
2	S1182	I 55 Stev NE	.75 mile W of Central	Cook	Sign	S-3
3	S5052	I 55 Stev	IL 83 SB	Cook	Sign	S-3
4	S5053	I 55 Stev	IL 83 NB	Cook	Sign	S-3
5	S5186	I 94 Ryan NB LOC	57th	Cook	Sign	S-3
6	S5188	I 94 Ryan NB EXP	57th	Cook	Sign	S-3
7	S5196	I 94 Ryan SB LOC	55st	Cook	Sign	S-3
8	S5197	I 94 Ryan SB EXP	55st	Cook	Sign	S-3

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

Ct	Loc. #	Main Route	Nearest Cross Street	Co.	Type of Equipment /Cabinet	RM Pay Item
9	S5292	I 94 Ryan SB LOC	39 th	Cook	Sign	S-3
10	S5293	I 94 Ryan SB EXP	39 th	Cook	Sign	S-3
11	S5296	I 94 Ryan NB LOC	37 th	Cook	Sign	S-3
12	S5298	I 94 Ryan NB EXP	37 th	Cook	Sign	S-3
13	S6177	I 94 Ford SB	119 th	Cook	Sign	S-3
14	S6178	I 94 Ford NB	124 th	Cook	Sign	S-3

1	XH57-123	I-57 IB	123 rd St	Cook	HAR Sign	X-1
2	XH80-EB	I-80 EB	ISTHA Lincoln Oasis	Cook	HAR Sign	X-1
3	XH80-WB	I-80 WB	Jarnecke	Cook	HAR Sign	X-1
4	XH9094-R	I-90/94 OB	Roosevelt Rd	Cook	HAR Sign	X-1
5	XH9094-59	I-90/94 IB	59 th St	Cook	HAR Sign	X-1
6	XH94-75	I-94 OB	75 th St	Cook	HAR Sign	X-1
7	XH94-91	I-94 IB	91 st St	Cook	HAR Sign	X-1
8	XH94-119	I-94 IB	119 th St	Cook	HAR Sign	X-1
9	XH94-159	I-94 OB	159 th St	Cook	HAR Sign	X-1
10	XH394-186	IL 394 IB	186 th St	Cook	HAR Sign	X-1

1	TBD	95 th	104 th Flavin Rd	Cook	In Forest Preserve	T-1
2	TBD	Chicago Hts Glenwood Rd	Holbrook Rd	Cook	Glenwood	T-1
3	TBD	Wolf Rd	183 rd	Cook	Orland Park	T-1
4	TBD	US 41	Searle Pkwy	Cook	Skokie	T-1
5	TBD	IL 7	Access Rd	Cook	TBD	T-1
6	TBD	IL 53	Walmart	DuPage	Addison	T-1
7	TBD	IL 64	Bennett	DuPage	Carol Stream	T-1
8	TBD	IL 38	Meredith	Kane	Elburn	T-1
9	TBD	IL 31	Oak	Kane	North Aurora	T-1
10	TBD	IL 25	Gilbert	Kane	South Elgin	T-1
11	TBD	IL 25	Stearns	Kane	South Elgin	T-1
12	TBD	IL 25	Stearns Dunham	Kane	South Elgin	T-1
13	TBD	IL 31	McLean Blvd	Kane	South Elgin	T-1
14	TBD	US 14	Pepper	Lake	Lake Barrington	T-1
15	TBD	US 12	Honey Lake	Lake	Lake Zurich	T-1
16	TBD	IL 120 W Belvidere	Cedar Lake	Lake	Round Lake	T-1
17	TBD	Grand Ave	Genesee	Lake	Waukegan	T-1
18	TBD	Grand Ave	County Rd	Lake	Waukegan	T-1
19	TBD	Grand Ave	West	Lake	Waukegan	T-1
20	TBD	Grand Ave	Jackson	Lake	Waukegan	T-1
21	TBD	Grand Ave	Butrick	Lake	Waukegan	T-1
22	TBD	Grand Ave	Lewis Ave	Lake	Waukegan	T-1
23	TBD	Grand Ave	McAree	Lake	Waukegan	T-1
24	TBD	Grand Ave	Baldwin	Lake	Waukegan	T-1
25	TBD	IL 31	Running Brook Farm	McHenry	Johnsburg	T-1
26	TBD	IL 53	Edgehill	Will	Bolingbrook	T-1

Various Routes
Section 2010-053-J
Various Counties
Contract 60L34

27	TBD	US 6	McKinley Woods Rd	Will	Channahon	T-1
28	TBD	US 52	Laraway Rd	Will	Channahon	T-1
29	TBD	IL 59	Vermette	Will	Joliet	T-1
30	TBD	IL 59	Walmart	Will	Joliet	T-1
31	TBD	US 30	Williams	Will	New Lenox	T-1
32	TBD	US 30	Walmart Marley	Will	New Lenox	T-1
33	TBD	IL 59	Fraser Feeney	Will	Plainfield	T-1
34	TBD	IL 59	School	Will	Shorewood	T-1

TABLE OF CONTENTS
BDE SPECIAL PROVISIONS

APPROVAL OF PROPOSED BORROW AREAS, USE AREAS, AND/OR WASTE AREAS INSIDE ILLINOIS STATE BORDERS (BDE) 657

CEMENT (BDE) 657

CERTIFICATION OF METAL FABRICATOR (BDE) 659

CONCRETE ADMIXTURES (BDE) 660

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)..... 663

CONSTRUCTION AIR QUALITY - DIESEL VEHICLE EMISSIONS CONTROL (BDE) 664

CONSTRUCTION AIR QUALITY - IDLING RESTRICTIONS (BDE)..... 665

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE) 667

EQUIPMENT RENTAL RATES (BDE)..... 674

FLAGGER AT SIDE ROADS AND ENTRANCES (BDE) 675

LIQUIDATED DAMAGES (BDE)..... 675

MAST ARM ASSEMBLY AND POLE (BDE)..... 676

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM / EROSION AND SEDIMENT CONTROL DEFICIENCY DEDUCTION (BDE) 677

PARTIAL EXIT RAMP CLOSURE FOR FREEWAY/EXPRESSWAY (BDE) 678

PAYMENTS TO SUBCONTRACTORS (BDE) 679

PERSONAL PROTECTIVE EQUIPMENT (BDE) 680

RAMP CLOSURE FOR FREEWAY/EXPRESSWAY (BDE)..... 680

REFLECTIVE SHEETING ON CHANNELIZING DEVICES (BDE) 681

SELECTION OF LABOR (BDE)..... 681

STORM SEWERS (BDE)..... 682

THERMOPLASTIC PAVEMENT MARKINGS (BDE) 689

TRUCK MOUNTED/TRAILER MOUNTED ATTENUATORS (BDE) 690

**APPROVAL OF PROPOSED BORROW AREAS, USE AREAS, AND/OR WASTE AREAS
INSIDE ILLINOIS STATE BORDERS (BDE)**

Effective: November 1, 2008

Revise the title of Article 107.22 of the Standard Specifications to read:

**“107.22 Approval of Proposed Borrow Areas, Use Areas, and/or Waste Areas Inside
Illinois State Borders.”**

Add the following sentence to the end of the first paragraph of Article 107.22 of the Standard Specifications:

“Proposed borrow areas, use areas, and/or waste areas outside of Illinois shall comply with Article 107.01.”

CEMENT (BDE)

Effective: January 1, 2007

Revised: April 1, 2009

Revise Section 1001 of the Standard Specifications to read:

“SECTION 1001. CEMENT

1001.01 Cement Types. Cement shall be according to the following.

- (a) Portland Cement. Acceptance of portland cement shall be according to the current Bureau of Materials and Physical Research’s Policy Memorandum, “Portland or Blended Cement Acceptance Procedure for Qualified and Non-Qualified Plants”.

Portland cement shall be according to ASTM C 150, and shall meet the standard physical and chemical requirements. Type I or Type II may be used for cast-in-place, precast, and precast prestressed concrete. Type III may be used according to Article 1020.04, or when approved by the Engineer. All other cements referenced in ASTM C 150 may be used when approved by the Engineer.

The total of all organic processing additions shall be a maximum of 1.0 percent by weight (mass) of the cement. The total of all inorganic processing additions shall be a maximum of 4.0 percent by weight (mass) of the cement. However, a cement kiln dust inorganic processing addition shall be limited to a maximum of 1.0 percent. Organic processing additions shall be limited to grinding aids that improve the flowability of cement, reduce pack set, and improve grinding efficiency. Inorganic processing additions shall be limited to granulated blast-furnace slag according to the chemical requirements of AASHTO M 302, Class C fly ash according to the chemical requirements of AASHTO M 295, and cement kiln dust.

- (b) Portland-Pozzolan Cement. Acceptance of portland-pozzolan cement shall be according to the current Bureau of Materials and Physical Research’s Policy Memorandum, “Portland or Blended Cement Acceptance Procedure for Qualified and Non-Qualified Plants”.

Portland-pozzolan cement shall be according to ASTM C 595 and shall meet the standard physical and chemical requirements. Type IP may be used for cast-in-place, precast, and precast prestressed concrete, except when Class PP concrete is used. The pozzolan constituent for Type IP shall be a maximum of 21 percent of the weight (mass) of the portland-pozzolan cement.

For cast-in-place construction, portland-pozzolan cement shall not be used in concrete mixtures when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is given, the mix design strength requirement may require the Contractor to increase the cement or eliminate the cement factor reduction for a water-reducing or high range water-reducing admixture which is permitted according to Article 1020.05(b).

The total of all organic processing additions shall be a maximum of 1.0 percent by weight (mass) of the cement. Organic processing additions shall be limited to grinding aids as defined in (a) above. Inorganic processing additions shall be limited to cement kiln dust at a maximum of 1.0 percent.

- (c) Portland Blast-Furnace Slag Cement. Acceptance of portland blast-furnace slag cement shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Portland or Blended Cement Acceptance Procedure for Qualified and Non-Qualified Plants".

Portland blast-furnace slag cement shall be according to ASTM C 595 and shall meet the standard physical and chemical requirements. Type IS portland blast-furnace slag cement may be used for cast-in-place, precast, and precast prestressed concrete, except when Class PP concrete is used. The blast-furnace slag constituent for Type IS shall be a maximum of 25 percent of the weight (mass) of the portland blast-furnace slag cement.

For cast-in-place construction, portland blast-furnace slag cement shall not be used in concrete mixtures when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is given, the mix design strength requirement may require the Contractor to increase the cement or eliminate the cement factor reduction for a water-reducing or high range water-reducing admixture which is permitted according to Article 1020.05(b).

The total of all organic processing additions shall be a maximum of 1.0 percent by weight (mass) of the cement. Organic processing additions shall be limited to grinding aids as defined in (a) above. Inorganic processing additions shall be limited to cement kiln dust at a maximum of 1.0 percent.

- (d) Rapid Hardening Cement. Rapid hardening cement shall be used according to Article 1020.04 or when approved by the Engineer. The cement shall be on the Department's current "Approved List of Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs", and shall be according to the following.

- (1) The cement shall have a maximum final set of 25 minutes, according to Illinois Modified ASTM C 191.

- (2) The cement shall have a minimum compressive strength of 2000 psi (13,800 kPa) at 3.0 hours, 3200 psi (22,100 kPa) at 6.0 hours, and 4000 psi (27,600 kPa) at 24.0 hours, according to Illinois Modified ASTM C 109.
 - (3) The cement shall have a maximum drying shrinkage of 0.050 percent at seven days, according to Illinois Modified ASTM C 596.
 - (4) The cement shall have a maximum expansion of 0.020 percent at 14 days, according to Illinois Modified ASTM C 1038.
 - (5) The cement shall have a minimum 80 percent relative dynamic modulus of elasticity; and shall not have a weight (mass) gain in excess of 0.15 percent or a weight (mass) loss in excess of 1.0 percent, after 100 cycles, according to AASHTO T 161, Procedure B.
- (e) Calcium Aluminate Cement. Calcium aluminate cement shall be used only where specified by the Engineer. The cement shall meet the standard physical requirements for Type I cement according to ASTM C 150, except the time of setting shall not apply. The chemical requirements shall be determined according to ASTM C 114 and shall be as follows: minimum 38 percent aluminum oxide (Al_2O_3), maximum 42 percent calcium oxide (CaO), maximum 1 percent magnesium oxide (MgO), maximum 0.4 percent sulfur trioxide (SO_3), maximum 1 percent loss on ignition, and maximum 3.5 percent insoluble residue.

1001.02 Uniformity of Color. Cement contained in single loads or in shipments of several loads to the same project shall not have visible differences in color.

1001.03 Mixing Brands and Types. Different brands or different types of cement from the same manufacturing plant, or the same brand or type from different plants shall not be mixed or used alternately in the same item of construction unless approved by the Engineer.

1001.04 Storage. Cement shall be stored and protected against damage, such as dampness which may cause partial set or hardened lumps. Different brands or different types of cement from the same manufacturing plant, or the same brand or type from different plants shall be kept separate.”

CERTIFICATION OF METAL FABRICATOR (BDE)

Effective: July 1, 2010

Revise Article 106.08 of the Standard Specifications to read:

“106.08 Certification of Metal Fabricator. All fabricators performing work on metal components of structures shall be certified under the appropriate category of the AISC Quality Certification Program as follows.

- (a) Fabricators of the main load carrying steel components of welded plate girder, box girder, truss, and arch structures shall be certified under Category MBr (Major Steel Bridges).

- (b) Fabricators of the main load carrying steel components of rolled beam structures, either simple span or continuous, and overhead sign structures shall be certified under Category SBr (Simple Steel Bridges).

Fabricators of steel or other non-ferrous metal components of structures not certified under (a) or (b) above shall be certified under the program for Bridge and Highway Metal Component Manufacturers.”

CONCRETE ADMIXTURES (BDE)

Effective: January 1, 2003

Revised: April 1, 2009

Replace the first paragraph of Article 1020.05(b) of the Standard Specifications to read:

“(b) Admixtures. The use of admixtures to increase the workability or to accelerate the hardening of the concrete will be permitted when approved by the Engineer. Admixture dosages shall result in the mixture meeting the specified plastic and hardened properties. The Department will maintain an Approved List of Corrosion Inhibitors. Corrosion inhibitor dosage rates shall be according to Article 1020.05(b)(12). The Department will also maintain an Approved List of Concrete Admixtures, and an admixture technical representative shall be consulted when determining an admixture dosage from this list. The dosage shall be within the range indicated on the approved list unless the influence by other admixtures, jobsite conditions (such as a very short haul time), or other circumstances warrant a dosage outside the range. The Engineer shall be notified when a dosage is proposed outside the range. To determine an admixture dosage, air temperature, concrete temperature, cement source and quantity, finely divided mineral sources(s) and quantity, influence of other admixtures, haul time, placement conditions, and other factors as appropriate shall be considered. The Engineer may request the Contractor to have a batch of concrete mixed in the lab or field to verify the admixture dosage is correct. An admixture dosage or combination of admixture dosages shall not delay the initial set of concrete by more than one hour. When a retarding admixture is required or appropriate for a bridge deck or bridge deck overlay pour, the initial set time shall be delayed until the deflections due to the concrete dead load are no longer a concern for inducing cracks in the completed work. However, a retarding admixture shall not be used to further extend the pour time and justify the alteration of a bridge deck pour sequence.

When determining water in admixtures for water/cement ratio, the Contractor shall calculate 70 percent of the admixture dosage as water, except a value of 50 percent shall be used for a latex admixture used in bridge deck latex concrete overlays.”

Revise Section 1021 of the Standard Specifications to read:

“SECTION 1021. CONCRETE ADMIXTURES

1021.01 General. Admixtures shall be furnished in liquid form ready for use. The admixtures shall be delivered in the manufacturer's original containers, bulk tank trucks or such containers or tanks as are acceptable to the Engineer. Delivery shall be accompanied by a ticket which clearly identifies the manufacturer and trade name of the material. Containers shall be readily identifiable as to manufacturer and trade name of the material they contain.

Corrosion inhibitors will be maintained on the Department's Approved List of Corrosion Inhibitors. All other concrete admixture products will be maintained on the Department's Approved List of Concrete Admixtures. For the admixture submittal, a report prepared by an independent laboratory accredited by the AASHTO Materials Reference Laboratory (AMRL) for Portland Cement Concrete shall be provided. The report shall show the results of physical tests conducted no more than five years prior to the time of submittal, according to applicable specifications. However, for corrosion inhibitors the ASTM G 109 test information specified in ASTM C 1582 is not required to be from an independent lab. All other information in ASTM C 1582 shall be from an independent lab.

Tests shall be conducted using materials and methods specified on a "test" concrete and a "reference" concrete, together with a certification that no changes have been made in the formulation of the material since the performance of the tests. Per the manufacturer's option, the cement content for all required tests shall either be according to applicable specifications or 5.65 cwt/cu yd (335 kg/cu m). Compressive strength test results for six months and one year will not be required.

Prior to the approval of an admixture, the Engineer reserves the right to request a sample for testing. The test and reference concrete mixtures tested by the Engineer will contain a cement content of 5.65 cwt/cu yd (335 kg/cu m). For freeze-thaw testing, the Department will perform the test according to AASHTO T 161, Procedure B. The flexural strength test will be performed according to AASHTO T 177. If the Engineer decides to test the admixture, the manufacturer shall submit AASHTO T 197 water content and set time test results on the standard cement used by the Department. The test and reference concrete mixture shall contain a cement content of 5.65 cwt/cu yd (335 kg/cu m). The manufacturer may select their lab or an independent lab to perform this testing. The laboratory is not required to be accredited by AASHTO.

The manufacturer shall include in the submittal the following admixture information: the manufacturing range for specific gravity, the midpoint and manufacturing range for residue by oven drying, and the manufacturing range for pH. The submittal shall also include an infrared spectrophotometer trace no more than five years old.

For air-entraining admixtures according to Article 1021.02, the specific gravity allowable manufacturing range shall be established by the manufacturer and the test method shall be according to ASTM C 494. For residue by oven drying and pH, the allowable manufacturing range and test methods shall be according to ASTM C 260.

For admixtures according to Articles 1021.03, 1021.04, 1021.05, 1021.06, and 1021.07, the pH allowable manufacturing range shall be established by the manufacturer and the test method shall be according to ASTM E 70. For specific gravity and residue by oven drying, the allowable manufacturing range and test methods shall be according to ASTM C 494.

When test results are more than seven years old, the manufacturer shall re-submit the infrared spectrophotometer trace and the report prepared by an independent laboratory accredited by AASHTO.

All admixtures, except chloride-based accelerators, shall contain a maximum of 0.3 percent chloride by weight (mass).

Random field samples may be taken by the Department to verify an admixture meets specification. A split sample will be provided to the manufacturer if requested. Admixtures that do not meet specification requirements or an allowable manufacturing range established by the manufacturer shall be replaced with new material.

1021.02 Air-Entraining Admixtures. Air-entraining admixtures shall be according to AASHTO M 154.

1021.03 Retarding and Water-Reducing Admixtures. The admixture shall be according to the following.

- (a) The retarding admixture shall be according to AASHTO M 194, Type B (retarding) or Type D (water-reducing and retarding).
- (b) The water-reducing admixture shall be according to AASHTO M 194, Type A.
- (c) The high range water-reducing admixture shall be according to AASHTO M 194, Type F (high range water-reducing) or Type G (high range water-reducing and retarding).

1021.04 Accelerating Admixtures. The admixture shall be according to AASHTO M 194, Type C (accelerating) or Type E (water reducing and accelerating).

1021.05 Self-Consolidating Admixtures. The self-consolidating admixture system shall consist of either a high range water-reducing admixture only or a high range water-reducing admixture combined with a separate viscosity modifying admixture. The one or two component admixture system shall be capable of producing a concrete mixture that can flow around reinforcement and consolidate under its own weight without additional effort and without segregation.

The high range water-reducing admixture shall be according to AASHTO M 194, Type F.

The viscosity modifying admixture shall be according to ASTM C 494, Type S (specific performance).

1021.06 Rheology-Controlling Admixture. The rheology-controlling admixture shall be capable of producing a concrete mixture with a lower yield stress that will consolidate easier for slipform applications used by the Contractor. The rheology-controlling admixture shall be according to ASTM C 494, Type S (specific performance).

1021.07 Corrosion Inhibitor. The corrosion inhibitor shall be according to one of the following.

- (a) Calcium Nitrite. The corrosion inhibitor shall contain a minimum 30 percent calcium nitrite by weight (mass) of solution, and shall comply with the requirements of AASHTO M 194, Type C (accelerating).
- (b) Other Materials. The corrosion inhibitor shall be according to ASTM C 1582.”

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)

Effective: June 1, 2010

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term “equipment” refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted using the phased in approach shown below. Equipment that is of a model year older than the year given for that equipment’s respective horsepower range shall be retrofitted:

Effective Dates	Horsepower Range	Model Year
June 1, 2010 ^{1/}	600-749	2002
	750 and up	2006
June 1, 2011 ^{2/}	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006
June 1, 2012 ^{2/}	50-99	2004
	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006

1/ Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

2/ Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

- a) Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (<http://www.epa.gov/otaq/retrofit/verif-list.htm>), or verified by the California Air Resources Board (CARB) (<http://www.arb.ca.gov/diesel/verde/verde.htm>); or
- b) Retrofitted with a non-verified diesel retrofit emission control device if verified retrofit emission control devices are not available for equipment proposed to be used on the project, and if the Contractor has obtained a performance certification from the retrofit device manufacturer that the emission control device provides a minimum PM emission reduction of 50 percent.

Note: Large cranes (Crawler mounted cranes) which are responsible for critical lift operations are exempt from installing retrofit emission control devices if such devices adversely affect equipment operation.

Diesel powered off-road equipment with engine ratings of 50 hp and above, which are unable to be retrofitted with verified emission control devices or if performance certifications are not available which will achieve a minimum 50 percent PM reduction, may be granted a waiver by the Department if documentation is provided showing good faith efforts were made by the Contractor to retrofit the equipment.

Construction shall not proceed until the Contractor submits a certified list of the diesel powered off-road equipment that will be used, and as necessary, retrofitted with emission control devices. The list(s) shall include (1) the equipment number, type, make, Contractor/rental company name; and (2) the emission control devices make, model, USEPA or CARB verification number, or performance certification from the retrofit device manufacturer. Equipment reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation, prior to being used on the jobsite.

The Contractor shall submit an updated list of retrofitted off-road construction equipment as retrofitted equipment changes or comes on to the jobsite. The addition or deletion of any diesel powered equipment shall be included on the updated list.

If any diesel powered off-road equipment is found to be in non-compliance with any portion of this special provision, the Engineer will issue the Contractor a diesel retrofit deficiency deduction.

Any costs associated with retrofitting any diesel powered off-road equipment with emission control devices shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall not be grounds for a claim.

Diesel Retrofit Deficiency Deduction

When the Engineer determines that a diesel retrofit deficiency exists, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be \$1,000.00 for each deficiency identified.

The deficiency will be based on lack of diesel retrofit emissions control.

If a Contractor accumulates three diesel retrofit deficiency deductions for the same piece of equipment in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of the contract time, waiver of penalties, or be grounds for any claim.

CONSTRUCTION AIR QUALITY - DIESEL VEHICLE EMISSIONS CONTROL (BDE)

Effective: April 1, 2009

Revised: July 1, 2009

Diesel Vehicle Emissions Control. The reduction of construction air emissions shall be accomplished by using cleaner burning diesel fuel. The term "equipment" refers to any and all diesel fuel powered devices rated at 50 hp and above, to be used on the project site in excess of seven calendar days over the course of the construction period on the project site (including any "rental" equipment).

All equipment on the jobsite, with engine ratings of 50 hp and above, shall be required to: use Ultra Low Sulfur Diesel fuel (ULSD) exclusively (15 ppm sulfur content or less).

Diesel powered equipment in non-compliance will not be allowed to be used on the project site, and is also subject to a notice of non-compliance as outlined below.

The Contractor shall submit copies of monthly summary reports and include certified copies of the ULSD diesel fuel delivery slips for diesel fuel delivered to the jobsite for the reporting time period, noting the quantity of diesel fuel used.

If any diesel powered equipment is found to be in non-compliance with any portion of this specification, the Engineer will issue the Contractor a notice of non-compliance and identify an appropriate period of time, as outlined below under environmental deficiency deduction, in which to bring the equipment into compliance or remove it from the project site.

Any costs associated with bringing any diesel powered equipment into compliance with these diesel vehicle emissions controls shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall also not be grounds for a claim.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists, he/she will notify the Contractor in writing, and direct the Contractor to correct the deficiency within a specified time period. The specified time-period, which begins upon Contractor notification, will be from 1/2 hour to 24 hours long, based on the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge regarding the time period.

The deficiency will be based on lack of repair, maintenance and diesel vehicle emissions control.

If the Contractor fails to correct the deficiency within the specified time frame, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be \$1,000.00 for each deficiency identified.

If a Contractor or subcontractor accumulates three environmental deficiency deductions in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of contract time, waiver of penalties, or be grounds for any claim.

CONSTRUCTION AIR QUALITY - IDLING RESTRICTIONS (BDE)

Effective: April 1, 2009

Idling Restrictions. The Contractor shall establish truck-staging areas for all diesel powered vehicles that are waiting to load or unload material at the jobsite. Staging areas shall be located where the diesel emissions from the equipment will have a minimum impact on adjacent sensitive receptors.

The Department will review the selection of staging areas, whether within or outside the existing highway right-of-way, to avoid locations near sensitive areas or populations to the extent possible. Sensitive receptors include, but are not limited to, hospitals, schools, residences, motels, hotels, daycare facilities, elderly housing and convalescent facilities. Diesel powered engines shall also be located as far away as possible from fresh air intakes, air conditioners, and windows. The Engineer will approve staging areas before implementation.

Diesel powered vehicle operators may not cause or allow the motor vehicle, when it is not in motion, to idle for more than a total of 10 minutes within any 60 minute period, except under any of the following circumstances:

- 1) The motor vehicle has a gross vehicle weight rating of less than 8000 lb (3630 kg).
- 2) The motor vehicle idles while forced to remain motionless because of on-highway traffic, an official traffic control device or signal, or at the direction of a law enforcement official.
- 3) The motor vehicle idles when operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency.
- 4) A police, fire, ambulance, public safety, other emergency or law enforcement motor vehicle, or any motor vehicle used in an emergency capacity, idles while in an emergency or training mode and not for the convenience of the vehicle operator.
- 5) The primary propulsion engine idles for maintenance, servicing, repairing, or diagnostic purposes if idling is necessary for such activity.
- 6) A motor vehicle idles as part of a government inspection to verify that all equipment is in good working order, provided idling is required as part of the inspection.
- 7) When idling of the motor vehicle is required to operate auxiliary equipment to accomplish the intended use of the vehicle (such as loading, unloading, mixing, or processing cargo; controlling cargo temperature; construction operations, lumbering operations; oil or gas well servicing; or farming operations), provided that this exemption does not apply when the vehicle is idling solely for cabin comfort or to operate non-essential equipment such as air conditioning, heating, microwave ovens, or televisions.
- 8) When the motor vehicle idles due to mechanical difficulties over which the operator has no control.
- 9) The outdoor temperature is less than 32 °F (0 °C) or greater than 80 °F (26 °C).

When the outdoor temperature is greater than or equal to 32 °F (0 °C) or less than or equal to 80 °F (26 °C), a person who operates a motor vehicle operating on diesel fuel shall not cause or allow the motor vehicle to idle for a period greater than 30 minutes in any 60 minute period while waiting to weigh, load, or unload cargo or freight, unless the vehicle is in a line of vehicles that regularly and periodically moves forward.

The above requirements do not prohibit the operation of an auxiliary power unit or generator set as an alternative to idling the main engine of a motor vehicle operating on diesel fuel.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists based on non-compliance with the idling restrictions, he/she will notify the Contractor, and direct the Contractor to correct the deficiency.

If the Contractor fails to correct the deficiency a monetary deduction will be imposed. The monetary deduction will be \$1,000.00 for each deficiency identified.

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (DBE)

Effective: September 1, 2000

Revised: January 1, 2010

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor:

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. This determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform **10.00%** of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work.

A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set forth in this Special Provision:

- (a) The bidder documents that enough DBE participation has been obtained to meet the goal; or
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders may consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217)785-4611, or by visiting the Department's web site at www.dot.il.gov.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

(a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.

(b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.

(c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:

- (1) The names and addresses of DBE firms that will participate in the contract;
- (2) A description, including pay item numbers, of the work each DBE will perform;
- (3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
- (4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;

(5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,

(6) If the contract goal is not met, evidence of good faith efforts.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document the good faith efforts of the bidder before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan commits sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not commit sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

(a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable.

(5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

(7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.

(b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision and that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons why good faith efforts have not been found.

(c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217)785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery.

The determination shall become final if a request is not made and delivered. A request may provide additional written documentation and/or argument concerning the issue of whether an adequate good faith effort was made to meet the contract goal. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

- (2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement.
- (e) DBE as a material supplier:
 - (1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
 - (2) 100 percent goal credit for the cost of materials or supplies obtained from a DBE manufacturer.
 - (3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal.

(a) No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.

(b) The Contractor must notify and obtain written approval from the Department's Bureau of Small Business Enterprises prior to replacing a DBE or making any change in the participation of a DBE. Approval for replacement will be granted only if it is demonstrated that the DBE is unable or unwilling to perform. The Contractor must make every good faith effort to find another certified DBE subcontractor to substitute for the original DBE. The good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the original DBE, to the extent needed to meet the contract goal.

(c) Any deviation from the DBE condition-of-award or contract specifications must be approved, in writing, by the Department. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract.

(d) In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals.

Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:

- (1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or
 - (2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or
 - (3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonably competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.
- (e) Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted.
- (f) If the commitment of work is in the form of additional tasks assigned to an existing subcontract, than a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.
- (g) All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement. The Contractor shall not terminate for convenience a DBE listed in the Utilization Plan and then perform the work of the terminated DBE with its own forces, those of an affiliate or those of another subcontractor, whether DBE or not, without first obtaining the written consent of the Bureau of Small Business Enterprises to amend the Utilization Plan. The Contractor shall notify the Bureau of Small Business Enterprises of any termination for reasons other than convenience, and shall obtain approval for inclusion of the substitute DBE in the Utilization Plan. If good faith efforts following a termination of a DBE for cause are not successful, the Contractor shall contact the Bureau of Small Business Enterprises and provide a full accounting of the efforts undertaken to obtain substitute DBE participation. The Bureau of Small Business Enterprises will evaluate the good faith efforts in light of all circumstances surrounding the performance status of the contract, and determine whether the contract goal should be amended.
- (h) The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer.

If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (j) of this part.

(i) The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(j) Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

EQUIPMENT RENTAL RATES (BDE)

Effective: August 2, 2007

Revised: January 2, 2008

Replace the second and third paragraphs of Article 105.07(b)(4)a. of the Standard Specifications with the following:

"Equipment idled which cannot be used on other work, and which is authorized to standby on the project site by the Engineer, will be paid for according to Article 109.04(b)(4)."

Replace Article 109.04(b)(4) of the Standard Specifications with the following:

"(4) Equipment. Equipment used for extra work shall be authorized by the Engineer. The equipment shall be specifically described, be of suitable size and capacity for the work to be performed, and be in good operating condition. For such equipment, the Contractor will be paid as follows.

- a. Contractor Owned Equipment. Contractor owned equipment will be paid for by the hour using the applicable FHWA hourly rate from the "Equipment Watch Rental Rate Blue Book" (Blue Book) in effect when the force account work begins. The FHWA hourly rate is calculated as follows.

FHWA hourly rate = (monthly rate/176) x (model year adj.) x (Illinois adj.) + EOC

Where: EOC = Estimated Operating Costs per hour (from the Blue Book)

The time allowed will be the actual time the equipment is operating on the extra work. For the time required to move the equipment to and from the site of the extra work and any authorized idle (standby) time, payment will be made at the following hourly rate: 0.5 x (FHWA hourly rate - EOC).

All time allowed shall fall within the working hours authorized for the extra work.

The rates above include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs, overhaul and maintenance of any kind, depreciation, storage, overhead, profits, insurance, and all incidentals. The rates do not include labor.

The Contractor shall submit to the Engineer sufficient information for each piece of equipment and its attachments to enable the Engineer to determine the proper equipment category. If a rate is not established in the Blue Book for a particular piece of equipment, the Engineer will establish a rate for that piece of equipment that is consistent with its cost and use in the industry.

- b. Rented Equipment. Whenever it is necessary for the Contractor to rent equipment to perform extra work, the rental and transportation costs of the equipment plus five percent for overhead will be paid. In no case shall the rental rates exceed those of established distributors or equipment rental agencies.

All prices shall be agreed to in writing before the equipment is used.”

FLAGGER AT SIDE ROADS AND ENTRANCES (BDE)

Effective: April 1, 2009

Revise the second paragraph of Article 701.13(a) of the Standard Specifications to read:

“The Engineer will determine when a side road or entrance shall be closed to traffic. A flagger will be required at each side road or entrance remaining open to traffic within the operation where two-way traffic is maintained on one lane of pavement. The flagger shall be positioned as shown on the plans or as directed by the Engineer.”

Revise the first and second paragraph of Article 701.20(i) of the Standard Specifications to read:

“Signs, barricades, or other traffic control devices required by the Engineer over and above those specified will be paid for according to Article 109.04. All flaggers required at side roads and entrances remaining open to traffic including those that are shown on the Highway Standards and/or additional barricades required by the Engineer to close side roads and entrances will be paid for according to Article 109.04.”

LIQUIDATED DAMAGES (BDE)

Effective: April 1, 2009

Revise the table in Article 108.09 of the Standard Specifications to read:

"Schedule of Deductions for Each Day of Overrun in Contract Time"			
Original Contract Amount		Daily Charges	
From More Than	To and Including	Calendar Day	Work Day
\$ 0	\$ 100,000	\$ 375	\$ 500
100,000	500,000	625	875
500,000	1,000,000	1,025	1,425
1,000,000	3,000,000	1,125	1,550
3,000,000	5,000,000	1,425	1,950
5,000,000	10,000,000	1,700	2,350
10,000,000	And over	3,325	4,650"

MAST ARM ASSEMBLY AND POLE (BDE)

Effective: January 1, 2008

Revised: January 1, 2009

Revise Article 1077.03 of the Standard Specifications to read:

"1077.03 Mast Arm Assembly and Pole. Mast arm assembly and pole shall be as follows.

- (a) Steel Mast Arm Assembly and Pole and Steel Combination Mast Arm Assembly and Pole. The steel mast arm assembly and pole and steel combination mast arm assembly and pole shall consist of a traffic signal mast arm, a luminaire mast arm or davit (for combination pole only), a pole, and a base, together with anchor rods and other appurtenances. The configuration of the mast arm assembly, pole, and base shall be according to the details shown on the plans.
 - (1) Loading. The mast arm assembly and pole, and combination mast arm assembly and pole shall be designed for the loading shown on the Highway Standards or elsewhere on the plans, whichever is greater. The design shall be according to AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 1994 Edition for 80 mph (130 km/hr) wind velocity. However, the arm-to-pole connection for tapered signal and luminaire arms shall be according to the "ring plate" detail as shown in Figure 11-1(f) of the 2002 Interim, to the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 2001 4th Edition.
 - (2) Structural Steel Grade. The mast arm and pole shall be fabricated according to ASTM A 595, Grade A or B, ASTM A 572 Grade 55, or ASTM A 1011 Grade 55 HSLAS Class 2. The base and flange plates shall be of structural steel according to AASHTO M 270 Grade 50 (M 270M Grade 345). Luminaire arms and trussed arms 15 ft (4.5 m) or less shall be fabricated from one steel pipe or tube size according to ASTM A 53 Grade B or ASTM A 500 Grade B or C. All mast arm assemblies, poles, and bases shall be galvanized according to AASHTO M 111.

- (3) Fabrication. The design and fabrication of the mast arm assembly, pole, and base shall be according to the requirements of the Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals published by AASHTO. The mast arm and pole may be of single length or sectional design. If section design is used, the overlap shall be at least 150 percent of the maximum diameter of the overlapping section and shall be assembled in the factory.

The manufacturer will be allowed to slot the base plate in which other bolt circles may fit, providing that these slots do not offset the integrity of the pole. Circumferential welds of tapered arms and poles to base plates shall be full penetration welds.

- (4) Shop Drawing Approval. The Contractor shall submit detailed drawings showing design materials, thickness of sections, weld sizes, and anchor rods to the Engineer for approval prior to fabrication. These drawings shall be at least 11 x 17 in. (275 x 425 mm) in size and of adequate quality for microfilming.

- (b) Anchor Rods. The anchor rods shall be ASTM F 1554 Grade 105, coated by the hot-dip galvanizing process according to AASHTO M 232, and shall be threaded a minimum of 7 1/2 in. (185 mm) at one end and have a bend at the other end. The first 10 in. (250 mm) at the threaded end shall be galvanized. Two nuts, one lock washer, and one flat washer shall be furnished with each anchor rod. All nuts and washers shall be galvanized.”

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM / EROSION AND SEDIMENT CONTROL DEFICIENCY DEDUCTION (BDE)

Effective: April 1, 2007

Revised: November 1, 2009

Revise Article 105.03(a) of the Standard Specifications to read:

- “(a) National Pollutant Discharge Elimination System (NPDES) / Erosion and Sediment Control Deficiency Deduction When the Engineer is notified or determines an erosion and/or sediment control deficiency(s) exists, or the Contractor’s activities represents a violation of the Department’s NPDES permits, the Engineer will notify and direct the Contractor to correct the deficiency within a specified time. The specified time, which begins upon notification to the Contractor, will be from 1/2 hour to 1 week based on the urgency of the situation and the nature of the work effort required. The Engineer will be the sole judge.

A deficiency may be any lack of repair, maintenance, or implementation of erosion and/or sediment control devices included in the contract, or any failure to comply with the conditions of the Department’s NPDES permits. A deficiency may also be applied to situations where corrective action is not an option such as the failure to participate in a jobsite inspection of the project, failure to install required measures prior to initiating earth moving operations, disregard of concrete washout requirements, or other disregard of the NPDES permit.

If the Contractor fails to correct a deficiency within the specified time, a daily monetary deduction will be imposed for each calendar day or portion of a calendar day until the deficiency is corrected to the satisfaction of the Engineer. The calendar day(s) will begin with notification to the Contractor and end with the Engineer's acceptance of the correction. The base value of the daily monetary deduction is \$1000.00 and will be applied to each location for which a deficiency exists. The value of the deficiency deduction assessed for each infraction will be determined by multiplying the base value by a Gravity Adjustment Factor provided in Table A. Except for failure to participate in a required jobsite inspection of the project prior to initiating earthmoving operations which will be based on the total acreage of planned disturbance at the following multipliers: <5 Acres: 1; 5-10 Acres: 2; >10-25 Acres: 3; >25 Acres: 5. For those deficiencies where corrective action was not an option, the monetary deduction will be immediate and will be valued at one calendar day multiplied by a Gravity Adjustment Factor.

Table A Deficiency Deduction Gravity Adjustment Factors				
Types of Violations	Soil Disturbed and Not Permanently Stabilized At Time of Violation			
	< 5 Acres	5 - 10 Acres	>10 - 25 Acres	> 25 Acres
Failure to Install or Properly Maintain BMP	0.1 - 0.5	0.2 - 1.0	0.5 - 2.5	1.0 - 5
Careless Destruction of BMP	0.2 - 1	0.5 - 2.5	1.0 - 5.	1.0 - 5
Intrusion into Protected Resource	1.0 - 5	1.0 - 5	2.0 - 10	2.0 - 10
Failure to properly manage Chemicals, Concrete Washouts or Residuals, Litter or other Wastes	0.2 - 1	0.2 - 1	0.5 - 2.5	1.0 - 5
Improper Vehicle and Equipment Maintenance, Fueling or Cleaning	0.1 - 0.5	0.2 - 1	0.2 - 1	0.5 - 2.5
Failure to Provide or Update Written or Graphic Plans Required by SWPPP	0.2 - 1	0.5 - 2.5	1.0 - 5	1.0 - 5
Failure to comply with Other Provisions of the NPDES Permit	0.1 - 0.5	0.2 - 1	0.2 - 1	0.5 - 2.5"

PARTIAL EXIT RAMP CLOSURE FOR FREEWAY/EXPRESSWAY (BDE)

Effective: January 1, 2009

Description. This work shall consist of furnishing and installing traffic control for the partial closure of exit ramps on a freeway/expressway. Work shall be according to Section 701 except as modified herein.

Add the following after the fourth paragraph of Article 701.07 of the Standard Specifications:

“Drop-offs at the edge of pavement greater than 1 1/2 in. (40 mm) caused by the Contractor’s operations will be allowed only on one side of the ramp at a time.”

Delete the third paragraph of Article 701.17(e)(1) of the Standard Specifications.

Delete the third paragraph of Article 701.18(e)(3) of the Standard Specifications.

Revise the first sentence of Article 701.19(c) of the Standard Specifications to read:

“Traffic control and protection required under Standards 701201, 701206, 701306, 701326, 701336, 701406, 701421, 701456, 701501, 701502, 701601, 701602, 701606, 701701 and 701801 will be measured for payment on a lump sum basis.”

Add the following to the first paragraph of Article 701.20(b) of the Standard Specifications:

“TRAFFIC CONTROL AND PROTECTION STANDARD 701456;”

PAYMENTS TO SUBCONTRACTORS (BDE)

Effective: June 1, 2000

Revised: January 1, 2006

Federal regulations found at 49 CFR §26.29 mandate the Department to establish a contract clause to require Contractors to pay subcontractors for satisfactory performance of their subcontracts and to set the time for such payments.

State law also addresses the timing of payments to be made to subcontractors and material suppliers. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, requires that when a Contractor receives any payment from the Department, the Contractor shall make corresponding, proportional payments to each subcontractor and material supplier performing work or supplying material within 15 calendar days after receipt of the Department payment. Section 7 of the Act further provides that interest in the amount of two percent per month, in addition to the payment due, shall be paid to any subcontractor or material supplier by the Contractor if the payment required by the Act is withheld or delayed without reasonable cause. The Act also provides that the time for payment required and the calculation of any interest due applies to transactions between subcontractors and lower-tier subcontractors and material suppliers throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the State Prompt Payment Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

When progress payments are made to the Contractor according to Article 109.07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain.

Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause.

This Special Provision does not create any rights in favor of any subcontractor or material supplier against the State or authorize any cause of action against the State on account of any payment, nonpayment, delayed payment, or interest claimed by application of the State Prompt Payment Act. The Department will not approve any delay or postponement of the 15 day requirement except for reasonable cause shown after notice and hearing pursuant to Section 7(b) of the State Prompt Payment Act. State law creates other and additional remedies available to any subcontractor or material supplier, regardless of tier, who has not been paid for work properly performed or material furnished. These remedies are a lien against public funds set forth in Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c), and a recovery on the Contractor's payment bond according to the Public Construction Bond Act, 30 ILCS 550.

PERSONAL PROTECTIVE EQUIPMENT (BDE)

Effective: November 1, 2008

Revise the first sentence of Article 701.12 of the Standard Specifications to read:

“All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 for Conspicuity Class 2 garments.”

RAMP CLOSURE FOR FREEWAY/EXPRESSWAY (BDE)

Effective: January 1, 2009

Description. This work shall consist of furnishing and installing traffic control for the closure of ramps on a freeway/expressway. Work shall be according to Section 701 except as modified herein.

Delete the third paragraph of Article 701.17(e)(1) of the Standard Specifications.

Add the following to Article 701.18 of the Standard Specifications:

“(k) Standard 701451. Only one interchange at a time may have ramps closed and only one exit ramp and one entrance ramp may be closed at a time.

The Contractor shall furnish a portable changeable message sign to be placed on the mainline in advance of the ramp closure. The exact placement and display shall be as shown in the plans or as directed by the Engineer.”

Revise the first sentence of Article 701.19(c) of the Standard Specifications to read:

“Traffic control and protection required under Standards 701201, 701206, 701306, 701326, 701336, 701406, 701421, 701451, 701501, 701502, 701601, 701602, 701606, 701701 and 701801 will be measured for payment on a lump sum basis.”

Add the following to the first paragraph of Article 701.20(b) of the Standard Specifications:

“TRAFFIC CONTROL AND PROTECTION STANDARD 701451;”

REFLECTIVE SHEETING ON CHANNELIZING DEVICES (BDE)

Effective: April 1, 2007

Revised: November 1, 2008

Revise the seventh paragraph of Article 1106.02 of the Standard Specifications to read:

“At the time of manufacturing, the retroreflective prismatic sheeting used on channelizing devices shall meet or exceed the initial minimum coefficient of retroreflection as specified in the following table. Measurements shall be conducted according to ASTM E 810, without averaging. Sheeting used on cones, drums and flexible delineators shall be reboundable as tested according to ASTM D 4956. Prestriped sheeting for rigid substrates on barricades shall be white and orange. *The sheeting shall be uniform in color and devoid of streaks throughout the length of each roll. The color shall conform to the latest appropriate standard color tolerance chart issued by the U.S. Department of Transportation, Federal Highway Administration, and to the daytime and nighttime color requirements of ASTM D 4956.*

Initial Minimum Coefficient of Retroreflection candelas/foot candle/sq ft (candelas/lux/sq m) of material				
Observation Angle (deg.)	Entrance Angle (deg.)	White	Orange	Fluorescent Orange
0.2	-4	365	160	150
0.2	+30	175	80	70
0.5	-4	245	100	95
0.5	+30	100	50	40”

Revise the first sentence of the first paragraph of Article 1106.02(c) of the Standard Specifications to read:

“Barricades and vertical panels shall have alternating white and orange stripes sloping downward at 45 degrees toward the side on which traffic will pass.”

Revise the third sentence of the first paragraph of Article 1106.02(d) of the Standard Specifications to read:

“The bottom panels shall be 8 x 24 in. (200 x 600 mm) with alternating white and orange stripes sloping downward at 45 degrees toward the side on which traffic will pass.”

SELECTION OF LABOR (BDE)

Effective: July 2, 2010

Revise Section I of Check Sheet #5 of the Recurring Special Provisions to read:

“I. SELECTION OF LABOR

The Contractor shall comply with all Illinois statutes pertaining to the selection of labor.

**EMPLOYMENT OF ILLINOIS WORKERS DURING PERIODS OF EXCESSIVE
UNEMPLOYMENT**

Whenever there is a period of excessive unemployment in Illinois, which is defined herein as any month immediately following two consecutive calendar months during which the level of unemployment in the State of Illinois has exceeded five percent as measured by the United States Bureau of Labor Statistics in its monthly publication of employment and unemployment figures, the Contractor shall employ at least 90 percent Illinois laborers. "Illinois laborer" means any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident.

Other laborers may be used when Illinois laborers as defined herein are not available, or are incapable of performing the particular type of work involved, if so certified by the Contractor and approved by the Engineer. The Contractor may place no more than three of his/her regularly employed non-resident executive and technical experts, who do not qualify as Illinois laborers, to do work encompassed by this contract during period of excessive unemployment.

This provision applies to all labor, whether skilled, semi-skilled, or unskilled, whether manual or non-manual."

STORM SEWERS (BDE)

Effective: April 1, 2009

Revised: April 1, 2010

Add the following to Article 550.02 of the Standard Specifications:

"(p) Polyvinyl Chloride (PVC) Profile Wall Pipe-304	1040.03
(q) Polyethylene (PE) Pipe with a Smooth Interior	1040.04
(r) Corrugated Polyethylene (PE) Pipe with a Smooth Interior	1040.04
(s) Polyethylene (PE) Profile Wall Pipe	1040.04"

Add the following to the list of flexible pipes under Class B storm sewers in the first table of Article 550.03 of the Standard Specifications:

"Polyvinyl Chloride (PVC) Profile Wall Pipe-304
Polyethylene (PE) Pipe with a Smooth Interior
Corrugated Polyethylene (PE) Pipe with a Smooth Interior
Polyethylene (PE) Profile Wall Pipe"

Revise the 2nd - 7th tables of Article 550.03 of the Standard Specifications to read:

"STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE																				
Nom. Dia. in.	Type 1 Fill Height: 3' and less with 1' minimum cover										Type 2 Fill Height: Greater than 3', not exceeding 10'									
	RCCP Class	CSP Class	ESCP	PVC	CPVC	PVCPW -794	PVCPW -304	PE	CPE	PEPW	RCCP Class	CSP Class	ESCP	PVC	CPVC	PVCPW -794	PVCPW -304	PE	CPE	PEPW
10	NA	3	X	X	NA	NA	NA	X	NA	NA	NA	1	*X	X	**	NA	NA	X	NA	NA
12	IV	NA	NA	X	X	X	X	X	X	NA	III	1	*X	X	X	X	X	X	X	NA
15	IV	NA	NA	X	X	X	X	X	X	NA	III	2	X	X	X	X	X	X	X	NA
18	IV	NA	NA	X	X	X	X	X	X	X	III	2	X	X	X	X	X	X	X	X
21	IV	NA	NA	X	X	X	X	NA	NA	X	III	2	X	X	X	X	X	NA	NA	X
24	IV	NA	NA	X	X	X	X	X	X	X	III	2	X	X	X	X	X	X	X	X
27	IV	NA	NA	X	X	X	X	X	X	X	III	NA	X	X	X	X	X	X	X	X
30	III	NA	X	X	X	X	X	X	X	X	III	NA	X	X	X	X	X	X	X	X
33	III	NA	X	X	NA	X	X	X	X	X	III	NA	X	X	NA	X	X	X	X	X
36	III	NA	X	X	X	X	X	X	X	X	III	NA	X	X	X	X	X	X	X	X
42	II	NA	NA	NA	NA	X	X	X	X	X	III	NA	NA	NA	NA	X	X	X	X	X
48	II	NA	NA	NA	NA	X	X	X	X	X	III	NA	NA	NA	NA	X	X	X	X	X
54	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA	NA	NA
60	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
66	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
72	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
78	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
84	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
90	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
96	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
102	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
108	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA

- RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- CSP Concrete Sewer, Storm Drain, and Culvert Pipe
- ESCP Extra Strength Clay Pipe
- PVC Polyvinyl Chloride (PVC) Pipe
- CPVC Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior
- PVCPW-794 Polyvinyl Chloride (PVC) Profile Wall Pipe-794
- PVCPW-304 Polyvinyl Chloride (PVC) Profile Wall Pipe-304
- PE Polyethylene (PE) Pipe with a Smooth Interior
- CPE Corrugated Polyethylene (PE) Pipe with a Smooth Interior
- PEPW Polyethylene (PE) Profile Wall Pipe
- X This material may be used for the given pipe diameter and fill height.
- NA This material is Not Acceptable for the given pipe diameter and fill height.
- * May also use standard strength Clay Sewer Pipe
- ** May be used if Bureau of Materials and Physical Research approves and with manufacturer's certification.

STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE														
Nom. Dia. in.	Type 3 Fill Height: Greater than 10', not exceeding 15'									Type 4 Fill Height: Greater than 15', not exceeding 20'				
	RCCP Class	CSP Class	ESCP	PVC	CPVC	PVCPW -794	PVCPW -304	PE	PEPW	RCCP Class	PVC	CPVC	PVCPW -794	PVCPW -304
10	NA	3	X	X	**	NA	NA	X	NA	NA	X	**	NA	NA
12	IV	NA	X	X	X	X	X	X	NA	V	X	X	X	X
15	IV	NA	NA	X	X	X	X	X	NA	V	X	X	X	X
18	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
21	IV	NA	NA	X	X	X	X	NA	X	V	X	X	X	X
24	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
27	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
30	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
33	IV	NA	NA	X	NA	X	X	X	X	IV	X	NA	X	X
36	IV	NA	NA	X	X	X	X	X	X	IV	X	X	X	X
42	IV	NA	NA	NA	NA	X	X	X	X	IV	NA	NA	X	X
48	IV	NA	NA	NA	NA	X	X	X	X	IV	NA	NA	X	X
54	IV	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
60	IV	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
66	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
72	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
78	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
84	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
90	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
96	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
102	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
108	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA

- RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- CSP Concrete Sewer, Storm Drain, and Culvert Pipe
- ESCP Extra Strength Clay Pipe
- PVC Polyvinyl Chloride (PVC) Pipe
- CPVC Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior
- PVCPW-794 Polyvinyl Chloride (PVC) Profile Wall Pipe-794
- PVCPW-304 Polyvinyl Chloride (PVC) Profile Wall Pipe-304
- PE Polyethylene (PE) Pipe with a Smooth Interior
- PEPW Polyethylene (PE) Profile Wall Pipe
- X This material may be used for the given pipe diameter and fill height.
- NA This material is Not Acceptable for the given pipe diameter and fill height.
- ** May be used if Bureau of Materials and Physical Research approves and with manufacturer's certification.

STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE												
Nom. Dia. in.	Type 5 Fill Height: Greater than 20', not exceeding 25'					Type 6 Fill Height: Greater than 25', not exceeding 30'					Type 7 Fill Height: Greater than 30', not exceeding 35'	
	RCCP Class	PVC	CPVC	PVCPW -794	PVCPW -304	RCCP Class	PVC	CPVC	PVCPW -794	PVCPW -304	RCCP Class	PVC
10	NA	X	**	NA	NA	NA	X	**	NA	NA	NA	X
12	V-3160D	X	X	X	X	V-3790D	X	X	X	X	V-4000D	X
15	V-3080D	X	X	X	X	V-3390D	X	NA	NA	NA	V-3575D	X
18	V	X	X	X	X	V-3115D	X	NA	NA	NA	V-3300D	X
21	V	X	X	X	X	V	X	NA	NA	NA	V-3110D	X
24	V	X	X	X	X	V	X	NA	NA	NA	V	X
27	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
30	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
33	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
36	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
42	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
48	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
54	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
60	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
66	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
72	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
78	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
84	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
90	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
96	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
102	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
108	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
PVC Polyvinyl Chloride (PVC) Pipe
CPVC Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior
PVCPW-794 Polyvinyl Chloride (PVC) Profile Wall Pipe-794
PVCPW-304 Polyvinyl Chloride (PVC) Profile Wall Pipe-304
X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
** May be used if Bureau of Materials and Physical Research approves and with manufacturer's certification.
Note RCCP Class V - 3160D, etc. shall be furnished according to AASHTO M 170 Section 6.
These loads are D loads to produce a 0.01 in. crack.

STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE																				
Nom. Dia. mm	Type 1 Fill Height: 1 m and less with 0.3 m minimum cover										Type 2 Fill Height: Greater than 1 m, not exceeding 3 m									
	RCCP Class	CSP Class	ESCP	PVC	CPVC	PVCPW -794	PVCPW -304	PE	CPE	PEPW	RCCP Class	CSP Class	ESCP	PVC	CPVC	PVCPW -794	PVCPW -304	PE	CPE	PEPW
250	NA	3	X	X	NA	NA	NA	X	NA	NA	NA	1	*X	X	**	NA	NA	X	NA	NA
300	IV	NA	NA	X	X	X	X	X	X	NA	III	1	*X	X	X	X	X	X	X	NA
375	IV	NA	NA	X	X	X	X	X	X	NA	III	2	X	X	X	X	X	X	X	NA
450	IV	NA	NA	X	X	X	X	X	X	X	III	2	X	X	X	X	X	X	X	X
525	IV	NA	NA	X	X	X	X	NA	NA	X	III	2	X	X	X	X	X	NA	NA	X
600	IV	NA	NA	X	X	X	X	X	X	X	III	2	X	X	X	X	X	X	X	X
675	IV	NA	NA	X	X	X	X	X	X	X	III	NA	X	X	X	X	X	X	X	X
750	III	NA	X	X	X	X	X	X	X	X	III	NA	X	X	X	X	X	X	X	X
825	III	NA	X	X	NA	X	X	X	X	X	III	NA	X	X	NA	X	X	X	X	X
900	III	NA	X	X	X	X	X	X	X	X	III	NA	X	X	X	X	X	X	X	X
1050	II	NA	NA	NA	NA	X	X	X	X	X	III	NA	NA	NA	NA	X	X	X	X	X
1200	II	NA	NA	NA	NA	X	X	X	X	X	III	NA	NA	NA	NA	X	X	X	X	X
1350	II	NA	NA	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA	NA	NA
1500	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
1650	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
1800	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
1950	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
2100	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
2250	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
2400	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
2550	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA
2700	I	NA	NA	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA	NA	NA

- RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- CSP Concrete Sewer, Storm Drain, and Culvert Pipe
- ESCP Extra Strength Clay Pipe
- PVC Polyvinyl Chloride (PVC) Pipe
- CPVC Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior
- PVCPW-794 Polyvinyl Chloride (PVC) Profile Wall Pipe-794
- PVCPW-304 Polyvinyl Chloride (PVC) Profile Wall Pipe-304
- PE Polyethylene (PE) Pipe with a Smooth Interior
- CPE Corrugated Polyethylene (PE) Pipe with a Smooth Interior
- PEPW Polyethylene (PE) Profile Wall Pipe
- X This material may be used for the given pipe diameter and fill height.
- NA This material is Not Acceptable for the given pipe diameter and fill height.
- * May also use standard strength Clay Sewer Pipe
- ** May be used if Bureau of Materials and Physical Research approves and with manufacturer's certification.

STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE														
Nom. Dia. mm	Type 3 Fill Height: Greater than 3 m, not exceeding 4.5 m									Type 4 Fill Height: Greater than 4.5 m, not exceeding 6 m				
	RCCP Class	CSP Class	ESCP	PVC	CPVC	PVCPW -794	PVCPW -304	PE	PEPW	RCCP Class	PVC	CPVC	PVCPW -794	PVCPW -304
250	NA	3	X	X	**	NA	NA	X	NA	NA	X	**	NA	NA
300	IV	NA	X	X	X	X	X	X	NA	V	X	X	X	X
375	IV	NA	NA	X	X	X	X	X	NA	V	X	X	X	X
450	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
525	IV	NA	NA	X	X	X	X	NA	X	V	X	X	X	X
600	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
675	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
750	IV	NA	NA	X	X	X	X	X	X	V	X	X	X	X
825	IV	NA	NA	X	NA	X	X	X	X	IV	X	NA	X	X
900	IV	NA	NA	X	X	X	X	X	X	IV	X	X	X	X
1050	IV	NA	NA	NA	NA	X	X	X	X	IV	NA	NA	X	X
1200	IV	NA	NA	NA	NA	X	X	X	X	IV	NA	NA	X	X
1350	IV	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
1500	IV	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
1650	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
1800	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
1950	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
2100	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
2250	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
2400	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
2550	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA
2700	III	NA	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA

- RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
- CSP Concrete Sewer, Storm Drain, and Culvert Pipe
- ESCP Extra Strength Clay Pipe
- PVC Polyvinyl Chloride (PVC) Pipe
- CPVC Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior
- PVCPW-794 Polyvinyl Chloride (PVC) Profile Wall Pipe-794
- PVCPW-304 Polyvinyl Chloride (PVC) Profile Wall Pipe-304
- PE Polyethylene (PE) Pipe with a Smooth Interior
- PEPW Polyethylene (PE) Profile Wall Pipe
- X This material may be used for the given pipe diameter and fill height.
- NA This material is Not Acceptable for the given pipe diameter and fill height.
- ** May be used if Bureau of Materials and Physical Research approves and with manufacturer's certification.

STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE												
Nom. Dia. mm	Type 5 Fill Height: Greater than 6 m, not exceeding 7.5 m					Type 6 Fill Height: Greater than 7.5 m, not exceeding 9 m					Type 7 Fill Height: Greater than 9 m, not exceeding 10.5 m	
	RCCP Class	PVC	CPVC	PVCPW -794	PVCPW -304	RCCP Class	PVC	CPVC	PVCPW -794	PVCPW -304	RCCP Class	PVC
250	NA	X	**	NA	NA	NA	X	**	NA	NA	NA	X
300	V-150D	X	X	X	X	V-180D	X	X	X	X	V-190D	X
375	V-145D	X	X	X	X	V-160D	X	NA	NA	NA	V-170D	X
450	V	X	X	X	X	V-150D	X	NA	NA	NA	V-160D	X
525	V	X	X	X	X	V	X	NA	NA	NA	V-150D	X
600	V	X	X	X	X	V	X	NA	NA	NA	V	X
675	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
750	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
825	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
900	V	X	NA	NA	NA	V	X	NA	NA	NA	V	X
1050	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
1200	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
1350	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
1500	V	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
1650	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
1800	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
1950	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
2100	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
2250	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
2400	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
2550	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA
2700	IV	NA	NA	NA	NA	V	NA	NA	NA	NA	V	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
PVC Polyvinyl Chloride (PVC) Pipe
CPVC Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior
PVCPW-794 Polyvinyl Chloride (PVC) Profile Wall Pipe-794
PVCPW-304 Polyvinyl Chloride (PVC) Profile Wall Pipe-304
X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
** May be used if Bureau of Materials and Physical Research approves and with manufacturer's certification.
Note RCCP Class V - 150D, etc. shall be furnished according to AASHTO M 170M Section 6.
These loads are D loads to produce a 0.3 mm crack."

Revise the last paragraph of Article 550.06 of the Standard Specifications to read:

"PVC and PE pipes shall be joined according to the manufacturer's specifications."

Revise the second paragraph of Article 550.07 of the Standard Specifications to read:

"When using flexible pipe, as listed in the first table of Article 550.03, the aggregate shall be continued to a height of at least 1 ft (300 mm) above the top of the pipe and compacted to a minimum of 95 percent of standard lab density by mechanical means."

Revise Article 550.08 of the Standard Specifications to read:

"550.08 Deflection Testing for Storm Sewers. All PVC and PE storm sewers shall be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted. The testing shall be performed in the presence of the Engineer.

For PVC and PE storm sewers with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC and PE storm sewers with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel drag shall be used.

Where the mandrel is used, the mandrel shall be furnished by the Contractor and pulled by hand through the pipeline with a suitable rope or cable connected to each end. Winching or other means of forcing the deflection gauge through the pipeline will not be allowed.

The mandrel shall be of a shape similar to that of a true circle enabling the gauge to pass through a satisfactory pipeline with little or no resistance. The mandrel shall be of a design to prevent it from tipping from side to side and to prevent debris build-up from occurring between the channels of the adjacent fins or legs during operation. Each end of the core of the mandrel shall have fasteners to which the pulling cables can be attached. The mandrel shall have nine, various sized fins or legs of appropriate dimension for various diameter pipes. Each fin or leg shall have a permanent marking that states its designated pipe size and percent of deflection allowable.

The outside diameter of the mandrel shall be 95 percent of the base inside diameter. For all PVC pipe and PE Profile Wall pipe, the base inside diameter shall be defined using ASTM D 3034 methodology. For all other PE pipe, the base inside diameter shall be defined as the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications.

If the pipe is found to have a deflection greater than that specified, that pipe section shall be removed, replaced, and retested.”

Revise Article 1040.04(b) of the Standard Specifications to read:

“(b) Corrugated PE Pipe with a Smooth Interior. The pipe shall be according to AASHTO M 294 (nominal size – 12 to 48 in. (300 to 1200 mm)). The pipe shall be Type S or D.”

Revised the first and second paragraphs of Article 1040.04(c) to read:

“(c) PE Profile Wall Pipe. The pipe shall be according to ASTM F 894 and shall have a minimum ring stiffness constant of 160. The pipe shall also have a minimum cell classification of PE 334433C as defined in ASTM D 3350.

(1) Pipe Culverts and Storm Sewers. When used for pipe culverts and storm sewers, the section properties shall be according to AASHTO's Section 17. The manufacturer shall submit written certification that the material meets AASHTO's Section 17 properties.”

THERMOPLASTIC PAVEMENT MARKINGS (BDE)

Effective: January 1, 2007

Revise Article 1095.01(a)(2) of the Standard Specifications to read:

“(2) Pigment. The pigment used for the white thermoplastic compound shall be a high-grade pure (minimum 93 percent) titanium dioxide (TiO₂). The white pigment content shall be a minimum of ten percent by weight and shall be uniformly distributed throughout the thermoplastic compound.

The pigments used for the yellow thermoplastic compound shall not contain any hazardous materials listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1. The combined total of RCRA listed heavy metals shall not exceed 100 ppm when tested by X-ray fluorescence spectroscopy. The pigments shall also be heat resistant, UV stable and color-fast yellows, golds, and oranges, which shall produce a compound which shall match Federal Standard 595 Color No. 33538. The pigment shall be uniformly distributed throughout the thermoplastic compound.”

Revise Article 1095.01(b)(1)e. of the Standard Specifications to read:

“e. Daylight Reflectance and Color. The thermoplastic compound after heating for four hours ± five minutes at 425 ± 3 °F (218.3 ± 2 °C) and cooled at 77 °F (25 °C) shall meet the following requirements for daylight reflectance and color, when tested, using a color spectrophotometer with 45 degree circumferential/zero degree geometry, illuminant C, and two degree observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.

White: Daylight Reflectance75 percent min.
*Yellow: Daylight Reflectance45 percent min.

*Shall meet the coordinates of the following color tolerance chart.

x	0.490	0.475	0.485	0.530
y	0.470	0.438	0.425	0.456”

Revise Article 1095.01(b)(1)k. of the Standard Specifications to read:

“k. Accelerated Weathering. After heating the thermoplastic for four hours ± five minutes at 425 ± 3 °F (218.3 ± 2 °C) the thermoplastic shall be applied to a steel wool abraded aluminum alloy panel (Federal Test Std. No. 141, Method 2013) at a film thickness of 30 mils (0.70 mm) and allowed to cool for 24 hours at room temperature. The coated panel shall be subjected to accelerated weathering using the light and water exposure apparatus (fluorescent UV - condensation type) for 75 hours according to ASTM G 53 (equipped with UVB-313 lamps).

The cycle shall consist of four hours UV exposure at 122 °F (50 °C) followed by four hours of condensation at 104 °F (40 °C). UVB 313 bulbs shall be used. At the end of the exposure period, the panel shall not exceed 10 Hunter Lab Delta E units from the original material.”

TRUCK MOUNTED/TRAILER MOUNTED ATTENUATORS (BDE)

Effective: January 1, 2010

Revise Article 701.03(k) of the Standard Specifications to read:

“(k) Truck Mounted/Trailer Mounted Attenuators 1106.02”

Revise Article 701.15(h) of the Standard Specifications to read:

“(h) Truck Mounted/Trailer Mounted Attenuators (TMA). TMA units shall have a roll ahead distance in the event of an impact. The TMA shall be between 100 and 200 ft (30 and 60 m) behind the vehicle ahead or the workers. This distance may be extended by the Engineer.

TMA host vehicles shall have the parking brake engaged when stationary.

The driver and passengers of the TMA host vehicle should exit the vehicle if the TMA is to remain stationary for 15 minutes or more in duration.”

Revise Article 1106.02(g) of the Standard Specifications to read:

“(g) Truck Mounted/Trailer Mounted Attenuators. The attenuator shall be a NCHRP 350 approved unit for Test Level 3. Test Level 2 may be used as directed by the Engineer for normal posted speeds less than or equal to 45 mph.”

ILLINOIS DEPARTMENT OF LABOR

PREVAILING WAGES FOR VARIOUS COUNTIES EFFECTIVE AUGUST 2010

The Prevailing rates of wages are included in the Contract proposals which are subject to Check Sheet #5 of the Supplemental Specifications and Recurring Special Provisions. The rates have been ascertained and certified by the Illinois Department of Labor for the locality in which the work is to be performed and for each craft or type of work or mechanic needed to execute the work of the Contract. As required by Prevailing Wage Act (820 ILCS 130/0.01, et seq.) and Check Sheet #5 of the Contract, not less than the rates of wages ascertained by the Illinois Department of Labor and as revised during the performance of a Contract shall be paid to all laborers, workers and mechanics performing work under the Contract. Post the scale of wages in a prominent and easily accessible place at the site of work.

If the Illinois Department of Labor revises the prevailing rates of wages to be paid as listed in the specification of rates, the contractor shall post the revised rates of wages and shall pay not less than the revised rates of wages. Current wage rate information shall be obtained by visiting the Illinois Department of Labor web site at <http://www.state.il.us/agency/idol/> or by calling 312-793-2814. It is the responsibility of the contractor to review the rates applicable to the work of the contract at regular intervals in order to insure the timely payment of current rates. Provision of this information to the contractor by means of the Illinois Department of Labor web site satisfies the notification of revisions by the Department to the contractor pursuant to the Act, and the contractor agrees that no additional notice is required. The contractor shall notify each of its subcontractors of the revised rates of wages.

Cook County Prevailing Wage for August 2010

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
=====	==	===	=	=====	=====	=====	===	===	=====	=====	=====	=====
ASBESTOS ABT-GEN		ALL		35.200	35.700	1.5	1.5	2.0	9.130	8.370	0.000	0.400
ASBESTOS ABT-MEC		BLD		31.540	0.000	1.5	1.5	2.0	9.670	9.610	0.000	0.520
BOILERMAKER		BLD		43.020	46.890	2.0	2.0	2.0	6.720	9.890	0.000	0.350
BRICK MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
CARPENTER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
CEMENT MASON		ALL		41.850	43.850	1.5	1.5	2.0	8.600	9.810	0.000	0.220
CERAMIC TILE FNSHER		BLD		33.600	0.000	2.0	1.5	2.0	6.950	8.020	0.000	0.540
COMM. ELECT.		BLD		36.440	38.940	1.5	1.5	2.0	7.650	7.750	0.000	0.700
ELECTRIC PWR EQMT OP		ALL		40.850	46.430	1.5	1.5	2.0	10.27	12.98	0.000	0.310
ELECTRIC PWR GRNDMAN		ALL		31.860	46.430	1.5	1.5	2.0	8.010	10.13	0.000	0.240
ELECTRIC PWR LINEMAN		ALL		40.850	46.430	1.5	1.5	2.0	10.27	12.98	0.000	0.310
ELECTRICIAN		ALL		40.400	43.000	1.5	1.5	2.0	11.33	9.420	0.000	0.750
ELEVATOR CONSTRUCTOR		BLD		46.160	51.930	2.0	2.0	2.0	10.03	9.460	2.770	0.000
FENCE ERECTOR		ALL		32.660	34.660	1.5	1.5	2.0	10.67	10.00	0.000	0.500
GLAZIER		BLD		38.000	39.500	1.5	2.0	2.0	10.19	13.64	0.000	0.790
HT/FROST INSULATOR		BLD		42.050	44.550	1.5	1.5	2.0	9.670	10.81	0.000	0.520
IRON WORKER		ALL		40.750	42.750	2.0	2.0	2.0	12.45	17.09	0.000	0.300
LABORER		ALL		35.200	35.950	1.5	1.5	2.0	9.130	8.370	0.000	0.400
LATHER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
MACHINIST		BLD		43.160	45.160	1.5	1.5	2.0	7.640	8.700	0.000	0.000
MARBLE FINISHERS		ALL		29.100	0.000	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MARBLE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MATERIAL TESTER I		ALL		25.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MATERIALS TESTER II		ALL		30.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MILLWRIGHT		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
OPERATING ENGINEER		BLD 1		45.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 2		43.800	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 3		41.250	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 4		39.500	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 5		48.850	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 6		46.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 7		48.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 1		51.300	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 2		49.800	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 3		44.350	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 4		36.850	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 1		43.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 2		42.750	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 3		40.700	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 4		39.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 5		38.100	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 6		46.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 7		44.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
ORNAMNTL IRON WORKER		ALL		40.200	42.450	2.0	2.0	2.0	10.67	14.81	0.000	0.500
PAINTER		ALL		38.000	42.750	1.5	1.5	1.5	9.750	11.10	0.000	0.770
PAINTER SIGNS		BLD		31.740	35.640	1.5	1.5	1.5	2.600	2.540	0.000	0.000
PILEDRIVER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
PIPEFITTER		BLD		43.150	46.150	1.5	1.5	2.0	8.460	9.850	0.000	1.770
PLASTERER		BLD		39.250	41.610	1.5	1.5	2.0	10.60	10.69	0.000	0.550
PLUMBER		BLD		44.000	46.000	1.5	1.5	2.0	9.860	7.090	0.000	1.030
ROOFER		BLD		37.650	40.650	1.5	1.5	2.0	7.750	6.570	0.000	0.430
SHEETMETAL WORKER		BLD		40.460	43.700	1.5	1.5	2.0	9.830	16.25	0.000	0.630
SIGN HANGER		BLD		28.210	29.060	1.5	1.5	2.0	4.450	2.880	0.000	0.000
SPRINKLER FITTER		BLD		40.500	42.500	1.5	1.5	2.0	8.500	6.850	0.000	0.500
STEEL ERECTOR		ALL		40.750	42.750	2.0	2.0	2.0	10.95	15.99	0.000	0.300
STONE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
TERRAZZO FINISHER		BLD		35.150	0.000	1.5	1.5	2.0	6.950	10.57	0.000	0.380
TERRAZZO MASON		BLD		39.010	42.010	1.5	1.5	2.0	6.950	11.91	0.000	0.510

TILE MASON		BLD		40.490	44.490	2.0	1.5	2.0	6.950	9.730	0.000	0.610
TRAFFIC SAFETY WRKR		HWY		24.300	25.900	1.5	1.5	2.0	3.780	1.875	0.000	0.000
TRUCK DRIVER	E	ALL	1	30.700	31.350	1.5	1.5	2.0	6.750	5.450	0.000	0.150
TRUCK DRIVER	E	ALL	2	30.950	31.350	1.5	1.5	2.0	6.750	5.450	0.000	0.150
TRUCK DRIVER	E	ALL	3	31.150	31.350	1.5	1.5	2.0	6.750	5.450	0.000	0.150
TRUCK DRIVER	E	ALL	4	31.350	31.350	1.5	1.5	2.0	6.750	5.450	0.000	0.150
TRUCK DRIVER	W	ALL	1	32.550	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.000
TRUCK DRIVER	W	ALL	2	32.700	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.000
TRUCK DRIVER	W	ALL	3	32.900	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.000
TRUCK DRIVER	W	ALL	4	33.100	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.000
TUCKPOINTER		BLD		39.200	40.200	1.5	1.5	2.0	7.830	10.25	0.000	0.770

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.)

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

COOK COUNTY

TRUCK DRIVERS (WEST) - That part of the county West of Barrington Road.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS ELECTRICIAN

Installation, operation, inspection, maintenance, repair and service of radio, television, recording, voice sound vision production and reproduction, telephone and telephone interconnect, facsimile, data apparatus, coaxial, fibre optic and wireless equipment, appliances and systems used for the transmission and reception of signals of any nature, business, domestic, commercial, education, entertainment, and residential purposes, including but not limited to, communication and telephone, electronic and sound equipment, fibre optic and data communication systems, and the performance of any task directly related to such installation or service whether at new or existing sites, such tasks to include the placing of wire and cable and electrical power conduit or other raceway work within the equipment room and pulling wire and/or cable through conduit and the installation of any incidental conduit, such that the employees covered hereby can complete any job in full.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone,

granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators; Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcats (up to and including ¾ cu yd.) .

Class 4. Bobcats and/or other Skid Steer Loaders (other than bobcats up to and including ¾ cu yd.); Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall .

Class 7. Mechanics.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell Machine with Air Compressor; Dredges; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with shear attachments; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Off-Road Hauling Units (including articulating)/2 ton capacity or more; Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro- Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Gradall and machines of like nature.

OPERATING ENGINEER - FLOATING

Class 1. Craft Foreman; Diver/Wet Tender; and Engineer (hydraulic dredge).

Class 2. Crane/Backhoe Operator; 70 Ton or over Tug Operator; Mechanic/Welder; Assistant Engineer (Hydraulic Dredge); Leverman (Hydraulic Dredge); Diver Tender; Friction and Lattice Boom Cranes.

Class 3. Deck Equipment Operator, Machineryman; Maintenance of Crane (over 50 ton capacity); Tug/Launch Operator; Loader/Dozer and like equipment on Barge; and Deck Machinery, etc.

Class 4. Deck Equipment Operator, Machineryman/Fireman (4 Equipment Units or More); Off Road Trucks (2 ton capacity or more); Deck Hand, Tug Engineer, Crane Maintenance 50 Ton Capacity and Under or Backhoe Weighing 115,000 pounds or less; and Assistant Tug Operator.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

TRAFFIC SAFETY

Work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION - EAST & WEST

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; TEamsters Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or

similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

Du Page County Prevailing Wage for August 2010

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
=====	==	===	=	=====	=====	=====	===	===	=====	=====	=====	=====
ASBESTOS ABT-GEN		ALL		35.200	35.700	1.5	1.5	2.0	9.130	8.370	0.000	0.400
ASBESTOS ABT-MEC		BLD		31.540	0.000	1.5	1.5	2.0	9.670	9.610	0.000	0.520
BOILERMAKER		BLD		43.020	46.890	2.0	2.0	2.0	6.720	9.890	0.000	0.350
BRICK MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
CARPENTER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
CEMENT MASON		ALL		38.000	40.000	2.0	1.5	2.0	7.700	14.45	0.000	0.380
CERAMIC TILE FNSHER		BLD		33.600	0.000	2.0	1.5	2.0	6.950	8.020	0.000	0.540
COMMUNICATION TECH		BLD		32.650	34.750	1.5	1.5	2.0	7.650	13.98	0.400	0.490
ELECTRIC PWR EQMT OP		ALL		33.140	42.570	1.5	1.5	2.0	4.750	10.27	0.000	0.250
ELECTRIC PWR GRNDMAN		ALL		25.680	42.570	1.5	1.5	2.0	4.750	7.960	0.000	0.190
ELECTRIC PWR LINEMAN		ALL		39.420	42.570	1.5	1.5	2.0	4.750	12.22	0.000	0.300
ELECTRIC PWR TRK DRV		ALL		26.520	42.570	1.5	1.5	2.0	4.750	8.230	0.000	0.200
ELECTRICIAN		BLD		36.200	39.820	1.5	1.5	2.0	8.650	15.87	3.880	0.580
ELEVATOR CONSTRUCTOR		BLD		46.160	51.930	2.0	2.0	2.0	10.03	9.460	2.770	0.000
FENCE ERECTOR	NE	ALL		32.660	34.660	1.5	1.5	2.0	10.67	10.00	0.000	0.500
FENCE ERECTOR	W	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
GLAZIER		BLD		38.000	39.500	1.5	2.0	2.0	10.19	13.64	0.000	0.790
HT/FROST INSULATOR		BLD		42.050	44.550	1.5	1.5	2.0	9.670	10.81	0.000	0.520
IRON WORKER	E	ALL		40.750	42.750	2.0	2.0	2.0	12.45	17.09	0.000	0.300
IRON WORKER	W	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
LABORER		ALL		35.200	35.950	1.5	1.5	2.0	9.130	8.370	0.000	0.400
LATHER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
MACHINIST		BLD		43.160	45.160	1.5	1.5	2.0	7.640	8.700	0.000	0.000
MARBLE FINISHERS		ALL		29.100	0.000	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MARBLE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MATERIAL TESTER I		ALL		25.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MATERIALS TESTER II		ALL		30.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MILLWRIGHT		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
OPERATING ENGINEER		BLD	1	45.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	2	43.800	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	3	41.250	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	4	39.500	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	5	48.850	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	6	46.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	7	48.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	1	43.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	2	42.750	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	3	40.700	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	4	39.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	5	38.100	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	6	46.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	7	44.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
ORNAMNTL IRON WORKER	E	ALL		40.200	42.450	2.0	2.0	2.0	10.67	14.81	0.000	0.500
ORNAMNTL IRON WORKER	W	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
PAINTER		ALL		39.680	41.680	1.5	1.5	1.5	8.100	8.200	0.000	1.000
PAINTER SIGNS		BLD		31.740	35.640	1.5	1.5	1.5	2.600	2.540	0.000	0.000
PILEDRIIVER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
PIPEFITTER		BLD		39.500	41.500	1.5	1.5	2.0	9.900	13.24	0.000	1.360
PLASTERER		BLD		32.000	33.500	1.5	1.5	2.0	6.450	6.770	0.000	0.570
PLUMBER		BLD		39.500	41.500	1.5	1.5	2.0	9.900	13.24	0.000	1.360
ROOFER		BLD		37.650	40.650	1.5	1.5	2.0	7.750	6.570	0.000	0.430
SHEETMETAL WORKER		BLD		41.660	43.660	1.5	1.5	2.0	8.810	10.66	0.000	0.780
SPRINKLER FITTER		BLD		40.500	42.500	1.5	1.5	2.0	8.500	6.850	0.000	0.500
STEEL ERECTOR	E	ALL		40.750	42.750	2.0	2.0	2.0	10.95	15.99	0.000	0.300
STEEL ERECTOR	W	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
STONE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
TERRAZZO FINISHER		BLD		35.150	0.000	1.5	1.5	2.0	6.950	10.57	0.000	0.380
TERRAZZO MASON		BLD		39.010	42.010	1.5	1.5	2.0	6.950	11.91	0.000	0.510

TILE MASON	BLD	40.490	44.490	2.0	1.5	2.0	6.950	9.730	0.000	0.610
TRAFFIC SAFETY WRKR	HWY	24.300	25.900	1.5	1.5	2.0	3.780	1.875	0.000	0.000
TRUCK DRIVER	ALL 1	32.550	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TRUCK DRIVER	ALL 2	32.700	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TRUCK DRIVER	ALL 3	32.900	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TRUCK DRIVER	ALL 4	33.100	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TUCKPOINTER	BLD	39.200	40.200	1.5	1.5	2.0	7.830	10.25	0.000	0.770

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.)

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

DUPAGE COUNTY

IRON WORKERS AND FENCE ERECTOR (WEST) - West of Route 53.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

TRAFFIC SAFETY - work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Low voltage installation, maintenance and removal of telecommunication facilities (voice, sound, data and video) including telephone and data inside wire, interconnect, terminal equipment, central offices, PABX, fiber optic cable and equipment, micro waves, V-SAT, bypass, CATV, WAN (wide area networks), LAN (local area networks), and ISDN (integrated system digital network), pulling of wire in raceways, but not the installation of raceways.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators; Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcats (up to and including 3/4 cu yd.) .

Class 4. Bobcats and/or other Skid Steer Loaders (other than bobcats up to and including 3/4 cu yd.); Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall .

Class 7. Mechanics.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast

Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell Machine with Air Compressor; Dredges; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with shear attachments; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Off-Road Hauling Units (including articulating)/2 ton capacity or more; Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro- Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Gradall and machines of like nature.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or

clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

Kane County Prevailing Wage for August 2010

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
=====	==	===	=	=====	=====	=====	===	===	=====	=====	=====	=====
ASBESTOS ABT-GEN		ALL		35.200	35.700	1.5	1.5	2.0	9.130	8.370	0.000	0.400
ASBESTOS ABT-MEC		BLD		31.540	0.000	1.5	1.5	2.0	9.670	9.610	0.000	0.520
BOILERMAKER		BLD		43.020	46.890	2.0	2.0	2.0	6.720	9.890	0.000	0.350
BRICK MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
CARPENTER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
CEMENT MASON		ALL		41.550	43.550	2.0	1.5	2.0	7.900	10.81	0.000	0.150
CERAMIC TILE FNSHER		BLD		33.600	0.000	2.0	1.5	2.0	6.950	8.020	0.000	0.540
COMMUNICATION TECH	N	BLD		29.960	31.760	1.5	1.5	2.0	5.842	6.290	0.000	0.375
COMMUNICATION TECH	S	BLD		35.280	37.380	1.5	1.5	2.0	9.980	9.170	0.000	1.060
ELECTRIC PWR EQMT OP		ALL		33.140	42.570	1.5	1.5	2.0	4.750	10.27	0.000	0.250
ELECTRIC PWR GRNDMAN		ALL		25.680	42.570	1.5	1.5	2.0	4.750	7.960	0.000	0.190
ELECTRIC PWR LINEMAN		ALL		39.420	42.570	1.5	1.5	2.0	4.750	12.22	0.000	0.300
ELECTRIC PWR TRK DRV		ALL		26.520	42.570	1.5	1.5	2.0	4.750	8.230	0.000	0.200
ELECTRICIAN	N	ALL		42.200	46.420	1.5	1.5	2.0	10.76	10.20	0.000	0.530
ELECTRICIAN	S	BLD		42.470	46.720	1.5	1.5	2.0	9.340	10.61	0.000	1.270
ELEVATOR CONSTRUCTOR		BLD		46.160	51.930	2.0	2.0	2.0	10.03	9.460	2.770	0.000
FENCE ERECTOR		ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
GLAZIER		BLD		38.000	39.500	1.5	2.0	2.0	10.19	13.64	0.000	0.790
HT/FROST INSULATOR		BLD		42.050	44.550	1.5	1.5	2.0	9.670	10.81	0.000	0.520
IRON WORKER		ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
LABORER		ALL		35.200	35.950	1.5	1.5	2.0	9.370	8.130	0.000	0.400
LATHER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
MACHINIST		BLD		43.160	45.160	1.5	1.5	2.0	7.640	8.700	0.000	0.000
MARBLE FINISHERS		ALL		29.100	0.000	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MARBLE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MATERIAL TESTER I		ALL		25.200	0.000	1.5	1.5	2.0	9.370	8.130	0.000	0.400
MATERIALS TESTER II		ALL		30.200	0.000	1.5	1.5	2.0	9.370	8.130	0.000	0.400
MILLWRIGHT		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
OPERATING ENGINEER		BLD	1	45.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	2	43.800	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	3	41.250	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	4	39.500	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	5	48.850	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	6	46.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	7	48.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	1	43.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	2	42.750	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	3	40.700	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	4	39.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	5	38.100	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	6	46.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	7	44.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
ORNAMNTL IRON WORKER		ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
PAINTER		ALL		39.680	41.680	1.5	1.5	1.5	8.100	8.200	0.000	1.000
PAINTER SIGNS		BLD		31.740	35.640	1.5	1.5	1.5	2.600	2.540	0.000	0.000
PILEDRIIVER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
PIPEFITTER		BLD		39.500	41.500	1.5	1.5	2.0	9.900	13.24	0.000	1.360
PLASTERER		BLD		39.250	41.610	1.5	1.5	2.0	10.60	10.69	0.000	0.550
PLUMBER		BLD		39.500	41.500	1.5	1.5	2.0	9.900	13.24	0.000	1.360
ROOFER		BLD		37.650	40.650	1.5	1.5	2.0	7.750	6.570	0.000	0.430
SHEETMETAL WORKER		BLD		41.660	43.660	1.5	1.5	2.0	8.810	10.66	0.000	0.780
SIGN HANGER		BLD		26.070	27.570	1.5	1.5	2.0	3.800	3.550	0.000	0.000
SPRINKLER FITTER		BLD		40.500	42.500	1.5	1.5	2.0	8.500	6.850	0.000	0.500
STEEL ERECTOR		ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
STONE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
TERRAZZO FINISHER		BLD		35.150	0.000	1.5	1.5	2.0	6.950	10.57	0.000	0.380
TERRAZZO MASON		BLD		39.010	42.010	1.5	1.5	2.0	6.950	11.91	0.000	0.510
TILE MASON		BLD		40.490	44.490	2.0	1.5	2.0	6.950	9.730	0.000	0.610

TRAFFIC SAFETY WRKR	HWY	24.300	25.900	1.5	1.5	2.0	3.780	1.875	0.000	0.000
TRUCK DRIVER	ALL 1	32.550	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TRUCK DRIVER	ALL 2	32.700	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TRUCK DRIVER	ALL 3	32.900	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TRUCK DRIVER	ALL 4	33.100	33.100	1.5	1.5	2.0	6.500	4.350	0.000	0.150
TUCKPOINTER	BLD	39.200	40.200	1.5	1.5	2.0	7.830	10.25	0.000	0.770

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.)

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

KANE COUNTY

ELECTRICIANS AND COMMUNICATIONS TECHNICIAN (NORTH) - Townships of Burlington, Campton, Dundee, Elgin, Hampshire, Plato, Rutland, St. Charles (except the West half of Sec. 26, all of Secs. 27, 33, and 34, South half of Sec. 28, West half of Sec. 35), Virgil and Valley View CCC and Elgin Mental Health Center.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Construction, installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security systems, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central offices, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN (wide area network), LAN (local area networks), and ISDN (integrated system digital network), pulling of wire in raceways, but not the installation of raceways.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers

treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators; Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcats (up to and including 3/4 cu yd.) .

Class 4. Bobcats and/or other Skid Steer Loaders (other than bobcats up to and including 3/4 cu yd.); Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall .

Class 7. Mechanics.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell Machine with Air Compressor; Dredges; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with shear attachments; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Off-Road Hauling Units (including articulating)/2 ton capacity or more; Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro- Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Gradall and machines of like nature.

TRAFFIC SAFETY - work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being

contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

Lake County Prevailing Wage for August 2010

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
=====	==	===	=	=====	=====	=====	===	===	=====	=====	=====	=====
ASBESTOS ABT-GEN		ALL		35.200	35.700	1.5	1.5	2.0	9.130	8.370	0.000	0.400
ASBESTOS ABT-MEC		BLD		31.540	0.000	1.5	1.5	2.0	9.670	9.610	0.000	0.520
BOILERMAKER		BLD		43.020	46.890	2.0	2.0	2.0	6.720	9.890	0.000	0.350
BRICK MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
CARPENTER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
CEMENT MASON		ALL		40.300	42.300	2.0	1.5	2.0	8.900	11.08	0.000	0.150
CERAMIC TILE FNSHER		BLD		33.600	0.000	2.0	1.5	2.0	6.950	8.020	0.000	0.540
COMMUNICATION TECH		BLD		34.150	36.250	1.5	1.5	2.0	9.900	9.560	1.370	0.510
ELECTRIC PWR EQMT OP		ALL		33.140	42.570	1.5	1.5	2.0	4.750	10.27	0.000	0.250
ELECTRIC PWR GRNDMAN		ALL		25.680	42.570	1.5	1.5	2.0	4.750	7.960	0.000	0.190
ELECTRIC PWR LINEMAN		ALL		39.420	42.570	1.5	1.5	2.0	4.750	12.22	0.000	0.300
ELECTRIC PWR TRK DRV		ALL		26.520	42.570	1.5	1.5	2.0	4.750	8.230	0.000	0.200
ELECTRICIAN		BLD		39.150	43.070	1.5	1.5	2.0	11.75	12.14	1.570	0.630
ELEVATOR CONSTRUCTOR		BLD		46.160	51.930	2.0	2.0	2.0	10.03	9.460	2.770	0.000
FENCE ERECTOR		ALL		32.660	34.660	1.5	1.5	2.0	10.67	10.00	0.000	0.500
GLAZIER		BLD		38.000	39.500	1.5	2.0	2.0	10.19	13.64	0.000	0.790
HT/FROST INSULATOR		BLD		42.050	44.550	1.5	1.5	2.0	9.670	10.81	0.000	0.520
IRON WORKER		ALL		40.750	42.750	2.0	2.0	2.0	12.45	17.09	0.000	0.300
LABORER		ALL		35.200	35.950	1.5	1.5	2.0	9.130	8.370	0.000	0.400
LATHER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
MACHINIST		BLD		43.160	45.160	1.5	1.5	2.0	7.640	8.700	0.000	0.000
MARBLE FINISHERS		ALL		29.100	0.000	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MARBLE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MATERIAL TESTER I		ALL		25.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MATERIALS TESTER II		ALL		30.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MILLWRIGHT		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
OPERATING ENGINEER		BLD 1		45.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 2		43.800	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 3		41.250	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 4		39.500	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 5		48.850	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 6		46.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD 7		48.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 1		51.300	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 2		49.800	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 3		44.350	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT 4		36.850	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 1		43.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 2		42.750	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 3		40.700	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 4		39.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 5		38.100	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 6		46.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY 7		44.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
ORNAMNTL IRON WORKER		ALL		40.200	42.450	2.0	2.0	2.0	10.67	14.81	0.000	0.500
PAINTER		ALL		38.000	42.750	1.5	1.5	1.5	9.750	11.10	0.000	0.770
PAINTER SIGNS		BLD		31.740	35.640	1.5	1.5	1.5	2.600	2.540	0.000	0.000
PILEDRIVER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.790	0.000	0.490
PIPEFITTER		BLD		43.150	46.150	1.5	1.5	2.0	8.460	9.850	0.000	1.770
PLASTERER		BLD		38.690	41.010	2.0	1.5	2.0	8.900	11.08	0.000	0.150
PLUMBER		BLD		42.650	45.150	1.5	1.5	2.0	9.900	9.450	0.000	0.950
ROOFER		BLD		37.650	40.650	1.5	1.5	2.0	7.750	6.570	0.000	0.430
SHEETMETAL WORKER		BLD		40.460	43.700	1.5	1.5	2.0	9.830	16.25	0.000	0.630
SIGN HANGER		BLD		28.210	29.060	1.5	1.5	2.0	4.450	2.880	0.000	0.000
SPRINKLER FITTER		BLD		40.500	42.500	1.5	1.5	2.0	8.500	6.850	0.000	0.500
STEEL ERECTOR		ALL		40.750	42.750	2.0	2.0	2.0	10.95	15.99	0.000	0.300
STONE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
TERRAZZO FINISHER		BLD		35.150	0.000	1.5	1.5	2.0	6.950	10.57	0.000	0.380

TERRAZZO MASON	BLD	39.010	42.010	1.5	1.5	2.0	6.950	11.91	0.000	0.510
TILE MASON	BLD	40.490	44.490	2.0	1.5	2.0	6.950	9.730	0.000	0.610
TRAFFIC SAFETY WRKR	HWY	24.300	25.900	1.5	1.5	2.0	3.780	1.875	0.000	0.000
TRUCK DRIVER	ALL 1	32.200	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TRUCK DRIVER	ALL 2	32.350	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TRUCK DRIVER	ALL 3	32.550	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TRUCK DRIVER	ALL 4	32.750	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TUCKPOINTER	BLD	39.200	40.200	1.5	1.5	2.0	7.830	10.25	0.000	0.770

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.)

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

LAKE COUNTY

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass,

mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATION TECHNICIAN

Low voltage construction, installation, maintenance and removal of telecommunication facilities (voice, sound, data and video) including outside plant, telephone, security systems and data inside wire, interconnect, terminal equipment, central offices, PABX, fiber optic cable and equipment, micro waves, V-SAT, bypass, CATV, WAN (wide area network), LAN (local area networks), and ISDN (integrated system digital network), pulling of wire in raceways, but not the installation of raceways.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators; Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcats (up to and including $\frac{3}{4}$ cu yd.) .

Class 4. Bobcats and/or other Skid Steer Loaders (other than bobcats up to and including $\frac{3}{4}$ cu yd.); Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall

Class 7. Mechanics

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck

Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell Machine with Air Compressor; Dredges; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with shear attachments; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Off-Road Hauling Units (including articulating)/2 ton capacity or more; Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro- Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Gradall and machines of like nature.

OPERATING ENGINEER - FLOATING

Class 1. Craft Foreman; Diver/Wet Tender; and Engineer (hydraulic dredge).

Class 2. Crane/Backhoe Operator; 70 Ton or over Tug Operator; Mechanic/Welder; Assistant Engineer (Hydraulic Dredge); Leverman (Hydraulic Dredge); Diver Tender; Friction and Lattice Boom Cranes.

Class 3. Deck Equipment Operator, Machineryman; Maintenance of Crane (over 50 ton capacity); Tug/Launch Operator; Loader/Dozer and like equipment on Barge; and Deck Machinery, etc.

Class 4. Deck Equipment Operator, Machineryman/Fireman (4 Equipment Units or More); Off Road Trucks (2 ton capacity or more); Deck Hand, Tug Engineer, Crane Maintenance 50 Ton Capacity and Under or Backhoe Weighing 115,000 pounds or less; and Assistant Tug Operator.

TRAFFIC SAFETY - work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and

Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

Mchenry County Prevailing Wage for August 2010

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
=====	==	===	=	=====	=====	=====	===	===	=====	=====	=====	=====
ASBESTOS ABT-GEN		ALL		35.200	35.700	1.5	1.5	2.0	9.130	8.370	0.000	0.400
ASBESTOS ABT-MEC		BLD		31.540	0.000	1.5	1.5	2.0	9.670	9.610	0.000	0.520
BOILERMAKER		BLD		43.020	46.890	2.0	2.0	2.0	6.720	9.890	0.000	0.350
BRICK MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
CARPENTER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
CEMENT MASON		ALL		41.550	43.550	2.0	1.5	2.0	7.900	10.81	0.000	0.150
CERAMIC TILE FNSHER		BLD		33.600	0.000	2.0	1.5	2.0	6.950	8.020	0.000	0.540
COMMUNICATION TECH		BLD		29.960	31.760	1.5	1.5	2.0	5.842	6.290	0.000	0.375
ELECTRIC PWR EQMT OP		ALL		33.140	42.570	1.5	1.5	2.0	4.750	10.27	0.000	0.250
ELECTRIC PWR GRNDMAN		ALL		25.680	42.570	1.5	1.5	2.0	4.750	7.960	0.000	0.190
ELECTRIC PWR LINEMAN		ALL		39.420	42.570	1.5	1.5	2.0	4.750	12.22	0.000	0.300
ELECTRIC PWR TRK DRV		ALL		26.520	42.570	1.5	1.5	2.0	4.750	8.230	0.000	0.200
ELECTRICIAN		ALL		42.200	46.420	1.5	1.5	2.0	10.76	10.20	0.000	0.530
ELEVATOR CONSTRUCTOR		BLD		46.160	51.930	2.0	2.0	2.0	10.03	9.460	2.770	0.000
FENCE ERECTOR	E	ALL		32.660	34.660	1.5	1.5	2.0	10.67	10.00	0.000	0.500
FENCE ERECTOR	S	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
GLAZIER		BLD		38.000	39.500	1.5	2.0	2.0	10.19	13.64	0.000	0.790
HT/FROST INSULATOR		BLD		42.050	44.550	1.5	1.5	2.0	9.670	10.81	0.000	0.520
IRON WORKER	E	ALL		40.750	42.750	2.0	2.0	2.0	12.45	17.09	0.000	0.300
IRON WORKER	S	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
IRON WORKER	W	ALL		35.000	36.750	2.0	2.0	2.0	8.000	19.34	0.000	1.200
LABORER		ALL		35.200	35.950	1.5	1.5	2.0	9.370	8.130	0.000	0.400
LATHER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
MACHINIST		BLD		43.160	45.160	1.5	1.5	2.0	7.640	8.700	0.000	0.000
MARBLE FINISHERS		ALL		29.100	0.000	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MARBLE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MATERIAL TESTER I		ALL		25.200	0.000	1.5	1.5	2.0	9.370	8.130	0.000	0.400
MATERIALS TESTER II		ALL		30.200	0.000	1.5	1.5	2.0	9.370	8.130	0.000	0.400
MILLWRIGHT		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
OPERATING ENGINEER		BLD	1	45.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	2	43.800	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	3	41.250	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	4	39.500	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	5	48.850	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	6	46.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	7	48.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	1	43.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	2	42.750	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	3	40.700	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	4	39.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	5	38.100	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	6	46.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	7	44.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
ORNAMNTL IRON WORKER	E	ALL		40.200	42.450	2.0	2.0	2.0	10.67	14.81	0.000	0.500
ORNAMNTL IRON WORKER	S	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
PAINTER		ALL		39.680	41.680	1.5	1.5	1.5	8.100	8.200	0.000	1.000
PAINTER SIGNS		BLD		31.740	35.640	1.5	1.5	1.5	2.600	2.540	0.000	0.000
PILEDRIVER		ALL		40.770	42.770	1.5	1.5	2.0	9.840	9.800	0.000	0.490
PIPEFITTER		BLD		43.150	46.150	1.5	1.5	2.0	8.460	9.850	0.000	1.770
PLASTERER		BLD		39.250	41.610	1.5	1.5	2.0	10.60	10.69	0.000	0.550
PLUMBER		BLD		42.650	45.150	1.5	1.5	2.0	9.900	9.450	0.000	0.950
ROOFER		BLD		37.650	40.650	1.5	1.5	2.0	7.750	6.570	0.000	0.430
SHEETMETAL WORKER		BLD		41.660	43.660	1.5	1.5	2.0	8.810	10.66	0.000	0.780
SIGN HANGER		BLD		26.070	27.570	1.5	1.5	2.0	3.800	3.550	0.000	0.000
SPRINKLER FITTER		BLD		40.500	42.500	1.5	1.5	2.0	8.500	6.850	0.000	0.500
STEEL ERECTOR	E	ALL		40.750	42.750	2.0	2.0	2.0	10.95	15.99	0.000	0.300
STEEL ERECTOR	S	ALL		43.300	45.460	2.0	2.0	2.0	8.140	17.29	0.000	0.400
STONE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740

TERRAZZO FINISHER	BLD	35.150	0.000	1.5	1.5	2.0	6.950	10.57	0.000	0.380
TERRAZZO MASON	BLD	39.010	42.010	1.5	1.5	2.0	6.950	11.91	0.000	0.510
TILE MASON	BLD	40.490	44.490	2.0	1.5	2.0	6.950	9.730	0.000	0.610
TRAFFIC SAFETY WRKR	HWY	24.300	25.900	1.5	1.5	2.0	3.780	1.875	0.000	0.000
TRUCK DRIVER	ALL 1	32.200	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TRUCK DRIVER	ALL 2	32.350	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TRUCK DRIVER	ALL 3	32.550	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TRUCK DRIVER	ALL 4	32.750	32.750	1.5	1.5	2.0	5.700	5.500	0.000	0.150
TUCKPOINTER	BLD	39.200	40.200	1.5	1.5	2.0	7.830	10.25	0.000	0.770

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.)

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

MCHENRY COUNTY

FENCE ERECTOR (EAST) - That part of the county East and Northeast of a line following Route 31 North to Route 14, northwest to Route 47 north to the Wisconsin State Line.

IRONWORKERS (EAST) - That part of the county East of Rts. 47 and 14.

IRONWORKERS (SOUTH) - That part of the county South of Route 14 and East of Route 47.

IRONWORKERS (WEST) - That part of the county West of Route 47.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished

at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Construction, installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security systems, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central offices, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN (wide area network), LAN (local area networks), and ISDN (integrated system digital network), pulling of wire in raceways, but not the installation of raceways.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all

material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators; Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcats (up to and including ¾ cu yd.) .

Class 4. Bobcats and/or other Skid Steer Loaders (other than bobcats up to and including ¾ cu yd.); Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall .

Class 7. Mechanics.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell Machine with Air Compressor; Dredges; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with shear attachments; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Off-Road Hauling Units (including articulating)/2 ton capacity or more; Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro- Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders.

Class 7. Gradall and machines of like nature.

TRAFFIC SAFETY - work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

Will County Prevailing Wage for August 2010

Trade Name	RG	TYP	C	Base	FRMAN	*M-F>8	OSA	OSH	H/W	Pensn	Vac	Trng
=====	==	===	=	=====	=====	=====	===	===	=====	=====	=====	=====
ASBESTOS ABT-GEN		ALL		35.200	35.700	1.5	1.5	2.0	9.130	8.370	0.000	0.400
ASBESTOS ABT-MEC		BLD		31.540	0.000	1.5	1.5	2.0	9.670	9.610	0.000	0.520
BOILERMAKER		BLD		43.020	46.890	2.0	2.0	2.0	6.720	9.890	0.000	0.350
BRICK MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
CARPENTER		ALL		40.770	44.850	1.5	1.5	2.0	8.590	13.36	0.000	0.490
CEMENT MASON		ALL		41.000	43.000	2.0	2.0	2.0	7.900	11.48	0.000	0.150
CERAMIC TILE FNSHER		BLD		33.600	0.000	2.0	1.5	2.0	6.950	8.020	0.000	0.540
COMMUNICATION TECH		BLD		32.200	33.700	1.5	1.5	2.0	9.670	9.670	0.000	0.320
ELECTRIC PWR EQMT OP		ALL		40.850	46.430	1.5	1.5	2.0	10.27	12.98	0.000	0.310
ELECTRIC PWR GRNDMAN		ALL		31.860	46.430	1.5	1.5	2.0	8.010	10.13	0.000	0.240
ELECTRIC PWR LINEMAN		ALL		40.850	46.430	1.5	1.5	2.0	10.27	12.98	0.000	0.310
ELECTRICIAN		BLD		39.500	43.060	1.5	1.5	2.0	11.77	14.23	0.000	0.400
ELEVATOR CONSTRUCTOR		BLD		46.160	51.930	2.0	2.0	2.0	10.03	9.460	2.770	0.000
GLAZIER		BLD		38.000	39.500	1.5	2.0	2.0	10.19	13.64	0.000	0.790
HT/FROST INSULATOR		BLD		42.050	44.550	1.5	1.5	2.0	9.670	10.81	0.000	0.520
IRON WORKER		ALL		38.000	39.000	2.0	2.0	2.0	8.140	17.52	0.000	0.600
LABORER		ALL		35.200	35.950	1.5	1.5	2.0	9.130	8.370	0.000	0.400
LATHER		ALL		40.770	44.850	1.5	1.5	2.0	8.590	13.36	0.000	0.490
MACHINIST		BLD		43.160	45.160	1.5	1.5	2.0	7.640	8.700	0.000	0.000
MARBLE FINISHERS		ALL		29.100	0.000	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MARBLE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
MATERIAL TESTER I		ALL		25.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MATERIALS TESTER II		ALL		30.200	0.000	1.5	1.5	2.0	9.130	8.370	0.000	0.400
MILLWRIGHT		ALL		40.770	44.850	1.5	1.5	2.0	8.590	13.36	0.000	0.490
OPERATING ENGINEER		BLD	1	45.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	2	43.800	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	3	41.250	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	4	39.500	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	5	48.850	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	6	46.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		BLD	7	48.100	49.100	2.0	2.0	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT	1	51.300	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT	2	49.800	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT	3	44.350	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		FLT	4	36.850	51.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	1	43.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	2	42.750	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	3	40.700	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	4	39.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	5	38.100	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	6	46.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
OPERATING ENGINEER		HWY	7	44.300	47.300	1.5	1.5	2.0	11.70	8.050	1.900	1.150
PAINTER		ALL		38.000	42.750	1.5	1.5	2.0	9.750	11.10	0.000	0.770
PAINTER SIGNS		BLD		31.740	35.640	1.5	1.5	1.5	2.600	2.540	0.000	0.000
PILEDRIVER		ALL		40.770	44.850	1.5	1.5	2.0	8.590	13.36	0.000	0.490
PIPEFITTER		BLD		43.150	46.150	1.5	1.5	2.0	8.460	9.850	0.000	1.770
PLASTERER		BLD		39.250	41.610	1.5	1.5	2.0	10.60	10.69	0.000	0.550
PLUMBER		BLD		43.000	45.000	1.5	1.5	2.0	9.500	10.00	0.000	1.310
ROOFER		BLD		37.650	40.650	1.5	1.5	2.0	7.750	6.570	0.000	0.430
SHEETMETAL WORKER		BLD		41.660	43.660	1.5	1.5	2.0	8.810	10.66	0.000	0.780
SPRINKLER FITTER		BLD		40.500	42.500	1.5	1.5	2.0	8.500	6.850	0.000	0.500
STONE MASON		BLD		39.030	42.930	1.5	1.5	2.0	8.800	10.67	0.000	0.740
TERRAZZO FINISHER		BLD		35.150	0.000	1.5	1.5	2.0	6.950	10.57	0.000	0.380
TERRAZZO MASON		BLD		39.010	42.010	1.5	1.5	2.0	6.950	11.91	0.000	0.510
TILE MASON		BLD		40.490	44.490	2.0	1.5	2.0	6.950	9.730	0.000	0.610
TRAFFIC SAFETY WRKR		HWY		24.300	25.900	1.5	1.5	2.0	3.780	1.875	0.000	0.000
TRUCK DRIVER		ALL	1	35.650	36.200	1.5	1.5	2.0	6.250	4.275	0.000	0.250
TRUCK DRIVER		ALL	2	35.800	36.200	1.5	1.5	2.0	6.250	4.275	0.000	0.250

TRUCK DRIVER	ALL	3	36.000	36.200	1.5	1.5	2.0	6.250	4.275	0.000	0.250
TRUCK DRIVER	ALL	4	36.200	36.200	1.5	1.5	2.0	6.250	4.275	0.000	0.250
TUCKPINTER	BLD		39.200	40.200	1.5	1.5	2.0	7.830	10.25	0.000	0.770

Legend:

M-F>8 (Overtime is required for any hour greater than 8 worked each day, Monday through Friday.)

OSA (Overtime is required for every hour worked on Saturday)

OSH (Overtime is required for every hour worked on Sunday and Holidays)

H/W (Health & Welfare Insurance)

Pensn (Pension)

Vac (Vacation)

Trng (Training)

Explanations

WILL COUNTY

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial/Decoration Day, Fourth of July, Labor Day, Veterans Day, Thanksgiving Day, Christmas Day. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration such as the day after Thanksgiving for Veterans Day. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings,

swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings, plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Installation, operation, inspection, maintenance, repair and service of radio, television, recording, voice, sound and vision production and reproduction, telephone and telephone interconnect, facsimile, equipment and appliances used for domestic, commercial, educational and entertainment purposes, pulling of wire through conduit but not the installation of conduit.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under; Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators; Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcats (up to and including 3/4 cu yd.) .

Class 4. Bobcats and/or other Skid Steer Loaders (other than bobcats up to and including 3/4 cu yd.); Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall .

Class 7. Mechanics.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dowell Machine with Air Compressor; Dredges; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form

Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Hydraulic Backhoes; Backhoes with shear attachments; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Trenching Machine; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; All Locomotives, Dinky; Off-Road Hauling Units (including articulating)/2 ton capacity or more; Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Scoops - Tractor Drawn; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper; Scraper - Prime Mover in Tandem (Regardless of Size); Tank Car Heater; Tractors, Push, Pulling Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Fireman on Boilers; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Hydro- Blaster; Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. Bobcats (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders.

Class 7. Gradall and machines of like nature.

OPERATING ENGINEER - FLOATING

Class 1. Craft Foreman; Diver/Wet Tender; and Engineer (hydraulic dredge).

Class 2. Crane/Backhoe Operator; 70 Ton or over Tug Operator; Mechanic/Welder; Assistant Engineer (Hydraulic Dredge); Leverman (Hydraulic Dredge); Diver Tender; Friction and Lattice Boom Cranes.

Class 3. Deck Equipment Operator, Machineryman; Maintenance of Crane (over 50 ton capacity); Tug/Launch Operator; Loader/Dozer and like equipment on Barge; and Deck Machinery, etc.

Class 4. Deck Equipment Operator, Machineryman/Fireman (4 Equipment Units or More); Off Road Trucks (2 ton capacity or more); Deck Hand, Tug Engineer, Crane Maintenance 50 Ton Capacity and Under or Backhoe Weighing 115,000 pounds or less; and Assistant Tug Operator.

TRAFFIC SAFETY - work associated with barricades, horses and drums used to reduce lane usage on highway work, the installation and removal of temporary lane markings, and the installation and removal of temporary road signs.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the

Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.