BID PROPOSAL INSTRUCTIONS

ABOUT IDOT PROPOSALS: All proposals are potential bidding proposals. Each proposal contains all certifications and affidavits, a proposal signature sheet and a proposal bid bond.

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.

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.

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 124) 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.

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?

When a prospective prime bidder submits a "Request for Authorization to Bid/or Not For Bid Status"(BDE 124) 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 and the Chief Procurement Officer 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 to Bid or Not For Bid Report within a reasonable time of complete and correct original document submittal should contact the Department as to the status. 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 bidder'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 or revision will be included with the Electronic Plans and Proposals. 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 service emails are an added courtesy the Department provides. It is suggested that bidders check IDOT's website at http://www.idot.illinois.gov/doing-business/procurements/construction-services/construction-bulletins/transportation-bulletin/index#TransportationBulletin 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 DOT.D&Econtracts@illlinois.gov

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

STANDARD GUIDELINES FOR SUBMITTING BIDS

- All pages should be single sided.
- Use the Cover Page that is provided in the Bid Proposal (posted on the IDOT Web Site) as the first page of your submitted bid. It has the item number in large bold type in the upper left-hand corner and lines provided for your company name and address in the upper right-hand corner.
- Do not use report covers, presentation folders or special bindings and do not staple multiple times on left side like a book. Use only 1 staple in the upper left hand corner. Make sure all elements of your bid are stapled together including the bid bond or guaranty check (if required).
- **Do not include any certificates of eligibility, your authorization to bid, Addendum Letters or affidavit of availability.**
- Do not include the Subcontractor Documentation with your bid (pages i – iii and pages a – g). This documentation is required only if you are awarded the project.
- Use the envelope cover sheet (provided with the proposal) as the cover for the proposal envelope.
- Do not rely on overnight services to deliver your proposal prior to 10 AM on letting day. It will not be read if it is delivered after 10 AM.
- Do not submit your Substance Abuse Prevention Program (SAPP) with your bid. If you are awarded the contract this form is to be submitted to the district engineer at the pre-construction conference.

BID SUBMITTAL CHECKLIST

☐ **Cover page** (the sheet that has the item number on it) **–** This should be the first page of your bid proposal, **followed by your bid (the Schedule of Prices/Pay Items).** If you are using special software or CBID to generate your schedule of prices, do not include the blank pages of the schedule of prices that came with the proposal package.

☐ **Page 4 (Item 9)** – Check "YES" if you will use a subcontractor(s) with an annual value over $50,000. Include the subcontractor(s) name, address, general type of work to be performed and the dollar amount. If you will use subcontractor(s) but are uncertain who or the dollar amount; check "YES" but leave the lines blank.

☐ **After page 4 –** Insert the following documents: Cost Adjustments for Steel, Bituminous and Fuel (if applicable) and the Contractor Letter of Assent (if applicable). The general rule should be, if you don't know where it goes, put it after page 4.

☐ **Page 10 (Paragraph J)** – Check "YES" or "NO" whether your company has any business in Iran.

☐ **Page 10 (Paragraph K)** – (Not applicable to federally funded projects) List the name of the apprenticeship and training program sponsor holding the certificate of registration from the US Department of Labor. If no applicable program exists, please indicate the work/job category. Do not include certificates with your bid. Keep the certificates in your office in case they are requested by IDOT.

☐ **Page 11 (Paragraph L)** – A copy of your State Board of Elections certificate of registration is no longer required with your bid.

☐ **Page 11 (Paragraph M)** – Indicate if your company has hired a lobbyist in connection with the job for which you are submitting the bid proposal.

☐ **Page 12 (Paragraph C)** – This is a work sheet to determine if a completed Form A is required. It is not part of the form and you do not need to make copies for each completed Form A.

☐ **Pages 14-17 (Form A)** – One Form A (4 pages) is required for each applicable person in your company. Copies of the forms can be used and only need to be changed when the information changes. The certification signature and date must be original for each letting. **Do not staple the forms together**. If you answered "NO" to all of the questions in Paragraph C (page 12), complete the first section (page 14) with your company information and then sign and date the Not Applicable statement on page 17.

☐ **Page 18 (Form B)** - If you check "YES" to having other current or pending contracts it is acceptable to use the phrase, "See Affidavit of Availability on file". **Ownership Certification** (at the bottom of the page) - Check N/A if the Form A(s) you submitted accounts for 100 percent of the company ownership. Check YES if any percentage of ownership falls outside of the parameters that require reporting on the Form A. Checking NO indicates that the Form A(s) you submitted is not correct and you will be required to submit a revised Form A.

☐ **Page 20 (Workforce Projection)** – Be sure to include the Duration of the Project. It is acceptable to use the phrase "Per Contract Specifications".

☐ **Proposal Bid Bond –** (Insert after the proposal signature page) Submit your proposal Proposal Bid Bond (if applicable) using the current Proposal Bid Bond form provided in the proposal package. The Power of Attorney page should be stapled to the Proposal Bid Bond. If you are using an electronic bond, include your bid bond number on the Proposal Bid Bond and attach the Proof of Insurance printed from the Surety's Web Site.

☐ **Disadvantaged Business Utilization Plan and/or Good Faith Effort –** The last items in your bid should be the DBE Utilization Plan (SBE 2026), followed by the DBE Participation Statement (SBE 2025) and supporting paperwork. If you have documentation of a Good Faith Effort, it is to follow the SBE Forms.

The Bid Letting is now available in streaming Audio/Video from the IDOT Web Site. A link to the stream will be placed on the main page of the current letting on the day of the Letting. The stream will not begin until 10 AM. The actual reading of the bids does not begin until approximately 10:30 AM.

Following the Letting, the As-Read Tabulation of Bids will be posted by the end of the day. You will find the link on the main Web page for the current letting.

QUESTIONS: pre-letting up to execution of the contract

Contractor pre-qualification	217-782-3413
Small Business, Disadvantaged Business Enterprise (DBE)	217-785-4611
Contracts, Bids, Letting process or Internet downloads	217-782-7806
Estimates Unit	217-785-3483
Aeronautics	217-785-8515
IDNR (Land Reclamation, Water Resources, Natural Resources)	217-782-6302

QUESTIONS: following contract execution

Subcontractor documentation, payments	217-782-3413
Railroad Insurance	217-785-0275

RETURN WITH BID

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Proposal Submitted By
Name
Address
City

Letting September 18, 2015

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.
BIDDERS NEED NOT RETURN THE ENTIRE PROPOSAL

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

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. 62A12
Various Counties
Section 2014-070-I
Various Routes
District 1 Construction Funds

PLEASE MARK THE APPROPRIATE BOX BELOW:

☐ A Bid Bond is included.

☐ A Cashier's Check or a Certified Check is included.

☐ An Annual Bid Bond is included or is on file with IDOT.

Prepared by

S

Checked by

(Printed by authority of the State of Illinois)

Page intentionally left blank

RETURN WITH BID

Illinois Department of Transportation

PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of _____

   _____

   Taxpayer Identification Number (Mandatory) _____

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

   Contract No. 62A12
   Various Counties
   Section 2014-070-I
   Various Routes
   District 1 Construction Funds

This project consists of annual maintenance and operation of traffic signals, highway lighting, surveillance systems, pump stations and other electrical systems located within District 1.

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 will govern performance and payments.

3. **ASSURANCE OF EXAMINATION AND INSPECTION/WAIVER.** The undersigned bidder further declares that he/she has carefully examined the proposal, plans, specifications, addenda, form of contract and contract bond, and special provisions, and that he/she has inspected in detail the site of the proposed work, and that he/she has familiarized themselves with all of the local conditions affecting the contract and the detailed requirements of construction, and understands that in making this bid proposal he/she waives all right to plead any misunderstanding regarding the same.

4. **EXECUTION OF CONTRACT AND CONTRACT BOND.** The undersigned bidder further agrees to execute a contract for this work and present the same to the department within fifteen (15) days after the contract has been mailed to him/her. The undersigned further agrees that he/she and his/her surety will execute and present within fifteen (15) days after the contract has been mailed to him/her contract bond satisfactory to and in the form prescribed by the Department of Transportation, in the penal sum of the full amount of the contract, or as specified in the special provisions, guaranteeing the faithful performance of the work in accordance with the terms of the contract.

5. **PROPOSAL GUARANTY.** Accompanying this proposal is either a bid bond on the department form, executed by a corporate surety company satisfactory to the department, or a proposal guaranty check consisting of a bank cashier's check or a properly certified check for not less than 5 per cent of the amount bid or for the amount specified in the following schedule:

Amount of Bid			Proposal Guaranty	Amount of Bid			Proposal Guaranty
Up to		$5,000	$150	$2,000,000	to	$3,000,000	$100,000
$5,000	to	$10,000	$300	$3,000,000	to	$5,000,000	$150,000
$10,000	to	$50,000	$1,000	$5,000,000	to	$7,500,000	$250,000
$50,000	to	$100,000	$3,000	$7,500,000	to	$10,000,000	$400,000
$100,000	to	$150,000	$5,000	$10,000,000	to	$15,000,000	$500,000
$150,000	to	$250,000	$7,500	$15,000,000	to	$20,000,000	$600,000
$250,000	to	$500,000	$12,500	$20,000,000	to	$25,000,000	$700,000
$500,000	to	$1,000,000	$25,000	$25,000,000	to	$30,000,000	$800,000
$1,000,000	to	$1,500,000	$50,000	$30,000,000	to	$35,000,000	$900,000
$1,500,000	to	$2,000,000	$75,000	over		$35,000,000	$1,000,000

Bank cashier's checks or properly certified checks accompanying bid proposals will be made payable to the Treasurer, State of Illinois.

If a combination bid is submitted, the proposal guaranties which accompany the individual bid proposals making up the combination will be considered as also covering the combination bid.

The amount of the proposal guaranty check is _____ $( ). If this proposal is accepted and the undersigned will fail to execute a contract bond as required herein, it is hereby agreed that the amount of the proposal guaranty will become the property of the State of Illinois, and shall be considered as payment of damages due to delay and other causes suffered by the State because of the failure to execute said contract and contract bond; otherwise, the bid bond will become void or the proposal guaranty check will be returned to the undersigned.

Attach Cashier's Check or Certified Check Here

In the event that one proposal guaranty check is intended to cover two or more bid proposals, the amount must be equal to the sum of the proposal guaranties which would be required for each individual proposal. If the guaranty check is placed in another bid proposal, state below where it may be found.

The proposal guaranty check will be found in the bid proposal for:

Item _____

Section No. _____

County _____

Mark the proposal cover sheet as to the type of proposal guaranty submitted.

6. **COMBINATION BIDS.** The undersigned bidder 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 contract 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 will 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 (the 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 transact business or conduct affairs in the State of Illinois prior to submitting the bid.

9. **EXECUTION OF CONTRACT**: The Department of Transportation will, in accordance with the rules governing Department procurements, execute the contract and shall be the sole entity having the authority to accept performance and make payments under the contract. Execution of the contract by the Chief Procurement Officer (CPO) or the State Purchasing Officer (SPO) is for approval of the procurement process and execution of the contract by the Department. Neither the CPO nor the SPO shall be responsible for administration of the contract or determinations respecting performance or payment there under except as otherwise permitted in the Code.

10. **The services of a subcontractor will be used.**

Check box Yes ☐
Check box No ☐

For known subcontractors with subcontracts with an annual value of more than $50,000, the contract shall include their name, address, general type of work to be performed, and the dollar allocation for each subcontractor. (30 ILCS 500/20-120)

_____

_____

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 62A12

State Job # - C-91-082-15

Project Number

Route
VARIOUS

County Name - VARIOUS- -
Code - 0 - -
District - 0 - -
Section Number - 2014-070-I

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0320990	D1 ELECT MAINT	L SUM	1.000				

CONTRACT NUMBER **62A12**

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 Code establishes the duty of all State CPOs, SPOs, 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 CPO to void the contract, and may result in the suspension or debarment of the bidder or subcontractor. If a false certification is made by a subcontractor the contractor's submitted bid and the executed contract may not be declared void unless the contractor refuses to terminate the subcontract upon the State's request after a finding that the subcontractor's certification was false.

☐ I acknowledge, understand and accept these terms and conditions.

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

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 State 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 State 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 calendar 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.

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. Information concerning the exemption process is available from the Department upon request.

B. Negotiations

Section 50-15. Negotiations.

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.

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

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 provide a submission to a vendor portal or 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, not making a submission to a vendor portal, or who withholds a bid or submission to a vendor portal in consideration of the promise for the payment of money or other valuable thing is guilty of a Class 4 felony.

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

Section 50-30. Revolving door prohibition.

CPOs, SPOs, 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.

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

Section 50-40. Reporting anticompetitive practices.

When, for any reason, any vendor, bidder, contractor, CPO, SPO, 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 CPO.

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 or submission to a vendor portal is submitted.

F. Confidentiality

Section 50-45. Confidentiality.

Any CPO, SPO, 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.

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.

G. Insider Information

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.

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.

☐ I acknowledge, understand and accept these terms and conditions for the above assurances.

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 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 CPO 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

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 2012.

(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 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 CPO 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.

The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50-5.

B. Felons

Section 50-10. Felons.

(a) 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.

(b) Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Code and every vendor's submission to a vendor portal 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 CPO may declare the related contract void if any of the certifications required by this Section are false.

C. Debt Delinquency

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 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 CPO 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

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

The bidder or contractor or subcontractor, respectively, certifies in accordance with Section 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 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 CPO 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

Section 50-14 Environmental Protection Act violations.

The bidder or contractor or subcontractor, respectively, certifies in accordance with Section 50-14 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 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 CPO may declare the contract void if this certification is false.

F. Educational Loan

Section 3 of the Educational Loan Default Act, 5 ILCS 385/3.

Pursuant to the Educational Loan Default Act no State agency shall contract with an individual for goods or services if that individual is in default on an educational loan.

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

Section 33E-11 of the Criminal Code of 2012, 720 ILCS 5/33E-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

(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.

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

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

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

I. Drug Free Workplace

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.

The bidder certifies that if awarded a contract in excess of $5,000 it will provide a drug free workplace in compliance with the provisions of the Act.

J. Disclosure of Business Operations in Iran

Section 50-36 of the Code 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 may cause the bid, offer or proposal to be considered not responsive. The disclosure will be considered when evaluating the bid 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 on 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 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.**

Additionally, Section 30-22 of the Code requires that the bidder certify that an Illinois office be maintained as the primary place of employment for persons employed for this contract.

_____

_____

_____

The requirements of these certifications and disclosures are a material part of the contract, and the contractor shall require these certification provisions 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.

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

Sections 20-160 and 50-37 of the 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 or any other procurement opportunity 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 Code, and that it makes the following certification:

The undersigned bidder 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. If the business entity is required to register, the CPO shall verify that it is in compliance on the date the bid or proposal is due. The CPO shall not accept a bid or proposal if the business entity is not in compliance with the registration requirements.

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 Code. This provision does not apply to Federal-aid contracts.

M. Lobbyist Disclosure

Section 50-38 of the 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 CPO 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 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: _____

_____

_____

_____

☐ I acknowledge, understand and accept these terms and conditions for the above certifications.

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 CPO may void the bid, or contract, 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 Code. Furthermore, the CPO 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 Code provides that all bids of more than $50,000 and all submissions to a vendor portal 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 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 100 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 individual 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 individual 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. A separate Disclosure Form A must be submitted with the bid for each individual meeting the above requirements. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies and a total ownership certification. **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 100 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 an individual 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 individual 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 an individual that is authorized to execute contracts for your organization. The individual signing can be, but does not have to be, the individual 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 an individual 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.

RETURN WITH BID

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 Section 50-35 of the 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 $50,000, 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. _____
_____

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 for 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, are you entitled to receive (i) more than 71/2% 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 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 __

(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 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: ☐ _____ _____
Signature of Individual or Authorized Representative Date

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.

☐ _____ _____
Signature of Authorized Representative Date

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

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Other Contracts & Financial 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 Section 50-35 of the Code (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for all bids.

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 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

☐ _____ _____
Signature of Authorized Representative Date

OWNERSHIP CERTIFICATION

Please certify that the following statement is true if the individuals for all submitted Form A disclosures do not total 100% of ownership.

Any remaining ownership interest is held by individuals receiving less than $106,447.20 of the bidding entity's or parent entity's distributive income or holding less than a 5% ownership interest.

☐ Yes ☐ No ☐ N/A (Form A disclosure(s) established 100% ownership)

RETURN WITH BID

SPECIAL NOTICE TO CONTRACTORS

The following requirements of the Illinois Department of Human Rights Act 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 Title 44, Illinois Administrative Code, Section 750.120. 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

Illinois Department of Transportation

Contract No. 62A12
Various Counties
Section 2014-070-I
Various Routes
District 1 Construction Funds

PART I. IDENTIFICATION

Dept. of Human Rights #_____ Duration of Project: _____

Name of Bidder: _____

PART II. WORKFORCE PROJECTION

A. The undersigned bidder has analyzed minority group and female populations, unemployment rates and availability of workers for the location in which this contract work is to be performed, and for the locations from which the bidder recruits employees, and hereby submits the following workforce projection including a projection for minority and female employee utilization in all job categories in the workforce to be allocated to this contract:

TABLE A

TOTAL Workforce Projection for Contract													TABLE B: CURRENT EMPLOYEES TO BE ASSIGNED TO CONTRACT			
			MINORITY EMPLOYEES						TRAINEES							
JOB CATEGORIES	TOTAL EMPLOYEES		BLACK		HISPANIC		*OTHER MINOR.		APPREN-TICES		ON THE JOB TRAINEES		TOTAL EMPLOYEES		MINORITY EMPLOYEES	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
OFFICIALS (MANAGERS)																
SUPERVISORS																
FOREMEN																
CLERICAL																
EQUIPMENT OPERATORS																
MECHANICS																
TRUCK DRIVERS																
IRONWORKERS																
CARPENTERS																
CEMENT MASONS																
ELECTRICIANS																
PIPEFITTERS, PLUMBERS																
PAINTERS																
LABORERS, SEMI-SKILLED																
LABORERS, UNSKILLED																
TOTAL																

TABLE C

TOTAL Training Projection for Contract								
EMPLOYEES IN TRAINING	TOTAL EMPLOYEES		BLACK		HISPANIC		*OTHER MINOR.	
	M	F	M	F	M	F	M	F
APPRENTICES								
ON THE JOB TRAINEES								

FOR DEPARTMENT USE ONLY

* Other minorities are defined as Asians (A) or Native Americans (N).
Please specify race of each employee shown in Other Minorities column.

BC 1256 (Rev. 12/11/07)

Note: See instructions on page 2

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 **Illinois 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.

BC-1256 (Rev. 12/11/07)

RETURN WITH BID
Contract No. 62A12
Various Counties
Section 2014-070-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.

Firm Name _____

(IF AN INDIVIDUAL) Signature of Owner _____

Business Address _____

_____

Firm Name _____

By _____

(IF A CO-PARTNERSHIP) Business Address _____

_____

Name and Address of All Members of the Firm:

_____ _____

_____ _____

Corporate Name _____

By _____

Signature of Authorized Representative

_____

Typed or printed name and title of Authorized Representative

(IF A CORPORATION)

Attest _____

Signature

(IF A JOINT VENTURE, USE THIS SECTION FOR THE MANAGING PARTY AND THE SECOND PARTY SHOULD SIGN BELOW) Business Address _____

_____

Corporate Name _____

By _____

Signature of Authorized Representative

_____

Typed or printed name and title of Authorized Representative

(IF A JOINT VENTURE)

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
Annual Proposal Bid Bond

This Annual Proposal Bid Bond shall become effective at 12:01 AM (CDST) on _____ and shall be valid until _____ 11:59 PM (CDST).

KNOW ALL PERSONS BY THESE PRESENTS, That We _____

as PRINCIPAL, and _____

as SURETY, and 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 the bid proposal under "Proposal Guaranty" in effect on the date of the 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 may submit bid proposal(s) to the STATE OF ILLINOIS, acting through the Department of Transportation, for various improvements published in the Transportation Bulletin during the effective term indicated above.

NOW, THEREFORE, if the Department shall accept the bid proposal(s) of the PRINCIPAL; and if the PRINCIPAL shall, within the time and as specified in the bidding and contract documents; 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 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 has caused this instrument to be signed by its officer
_____ day of _____ A.D., _____.

_____
(Company Name)

By _____
(Signature and Title)

Notary for PRINCIPAL

STATE OF _____
COUNTY OF _____

Signed and attested before me on _____ (date)

by _____
(Name of Notary Public)

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In TESTIMONY WHEREOF, the said SURETY has caused this instrument to be signed by its officer
_____ day of _____ A.D., _____.

_____
(Company Name)

By _____
(Signature of Attorney-in-Fact)

Notary for SURETY

STATE OF _____
COUNTY OF _____

Signed and attested before me on _____ (date)

by _____
(Name of Notary Public)

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In lieu of completing the above section of the Annual Proposal Bid Bond form, the Principal may file an Electronic Bid Bond. By signing the proposal(s) 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

This bond may be terminated, at Surety's request, upon giving not less than thirty (30) days prior written notice of the cancellation/termination of the bond. Said written notice shall be issued to the Illinois Department of Transportation, Chief Contracts Official, 2300 South Dirksen Parkway, Springfield, Illinois, 62764, and shall be served in person, by receipted courier delivery or certified or registered mail, return receipt requested. Said notice period shall commence on the first calendar day following the Department's receipt of written cancellation/termination notice. Surety shall remain firmly bound to all obligations herein for proposals submitted prior to the cancellation/termination. Surety shall be released and discharged from any obligation(s) for proposals submitted for any letting or date after the effective date of cancellation/termination.

Illinois Department of Transportation

Return with Bid

Division of Highways
Proposal Bid Bond

Item No. _____

Letting Date _____

KNOW ALL PERSONS BY THESE PRESENTS, That We _____

as PRINCIPAL, and _____

as SURETY, and 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 the bid proposal under "Proposal Guaranty" in effect on the date of the 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; 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 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 has caused this instrument to be signed by its officer
_____ day of _____ A.D., _____.

_____
(Company Name)

By _____
(Signature and Title)

Notary for PRINCIPAL

STATE OF _____
COUNTY OF _____

Signed and attested before me on _____ (date)
by _____
(Name of Notary Public)

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In TESTIMONY WHEREOF, the said SURETY has caused this instrument to be signed by its officer
_____ day of _____ A.D., _____.

_____
(Company Name)

By _____
(Signature of Attorney-in-Fact)

Notary for SURETY

STATE OF _____
COUNTY OF _____

Signed and attested before me on _____ (date)
by _____
(Name of Notary Public)

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In lieu of completing the above section of the Proposal Bid Bond form, the Principal may file an Electronic Bid Bond. By signing the proposal 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

Illinois Department of Transportation

DBE Utilization Plan

(1) Policy

It is public policy that disadvantaged 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 disadvantaged 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
2300 South Dirksen Parkway
Springfield, Illinois 62764

Local Let Projects
Submit forms to the
Local Agency

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the purpose as outlined under 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 Manager Center.

Illinois Department of Transportation

DBE Participation Statement

Subcontractor Registration Number _____ Letting _____

Participation Statement Item No. _____

(1) Instructions Contract No. _____

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. Trucking participation items; description must list what is anticipated towards goal credit.

(2) Work:

Please indicate: J/V _____ Manufacturer _____ Supplier (60%) _____ Subcontractor _____ Trucking _____

Pay Item No.	Description (Anticipated items for trucking)*	Quantity	Unit Price	Total
			Total	

(3) Partial Payment Items (For any of the above items which are partial pay items)
Description must be sufficient to determine a Commercially Useful Function, specifically describe the work and subcontract dollar amount:
*Applies to trucking only

(4) Commitment

When a DBE is to be a second-tier subcontractor, or if the first-tier DBE subcontractor is going to be subcontracting a portion of its subcontract, it must be clearly indicated on the DBE Participation Statement, and the details of the transaction fully explained.

In the event a DBE subcontractor second-tiers a portion of its subcontract to one or more subcontractors during the work of a contract, the prime must submit a DBE Participation Statement, with the details of the transaction(s) fully explained.

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 or 1st Tier subcontractor. 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 Contractor __ 1st Tier __ 2nd Tier

Date _____

Contact Person _____

Title _____

Firm Name _____

Address _____

City/State/Zip _____

Phone _____

Email Address _____

Signature for DBE Firm __ 1st Tier __ 2nd Tier

Date _____

Contact Person _____

Title _____

Firm Name _____

Address _____

City/State/Zip _____

Phone _____

Email Address _____

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

Illinois Department of Transportation

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. 62A12
Various Counties
Section 2014-070-I
Various Routes
District 1 Construction Funds

Illinois Department of Transportation

SUBCONTRACTOR DOCUMENTATION

Public Acts 96-0795, 96-0920, and 97-0895 enacted substantial changes to the provisions of the 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 that entered into a contractual agreement with a total value of $50,000 or more with a person or entity who has a contract subject to the Code and 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 Illinois Department of Transportation's CPO upon request within 15 calendar days after execution of the subcontract.

Financial disclosures required pursuant to Sec. 50-35 of the Code must be submitted for all applicable subcontractors. The subcontract shall contain the certifications required to be made by subcontractors pursuant to Article 50 of the 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 Code establishes the duty of all State CPOs, SPOs, 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 CPO may terminate or void the contract approval if it is later determined that the bidder or subcontractor rendered a false or erroneous certification. If a false certification is made by a subcontractor the contractor's submitted bid and the executed contract may not be declared void unless the contractor refuses to terminate the subcontract upon the State's request after a finding that the subcontractor's certification was false.

Section 50-2 of the 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 CPO 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

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 2012.

(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 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 CPO 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.

The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50-5.

B. Felons

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.

Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the 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 CPO may declare the related contract void if any of the certifications required by this Section are false.

C. Debt Delinquency

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 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 CPO 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

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 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 CPO 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 500/50-14 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 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 CPO 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 CPO 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 Code. Furthermore, the CPO may void the contract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Code provides that all subcontracts with a total value of $50,000 or more from subcontractors identified in Section 20-120 of the 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 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual 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 individual 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 individual 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. A separate Disclosure Form A must be submitted with the bid for each individual meeting the above requirements. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies and a total ownership certification. **The forms must be included with each bid.**

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 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual 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 an individual 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 individual 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 an individual that is authorized to execute contracts for your organization. The individual signing can be, but does not have to be, the individual 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 an individual 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.

RETURN WITH SUBCONTRACT

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 Section 50-35 of the 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. This information shall become part of the publicly available contract file. This Form A must be completed for subcontracts with a total value of $50,000 or more, from subcontractors identified in Section 20-120 of the Code, 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 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. **(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. _____

_____

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 then 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 __

(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: ☐ _____ _____

Signature of Individual or Authorized Officer — Date

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.

☐ _____ _____

Signature of Authorized Officer — Date

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ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Subcontractor: Other Contracts & Financial 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 Section 50-35 of the Code (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 $50,000 or more, from subcontractors identified in Section 20-120 of the 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 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

☐ _____ _____
Signature of Authorized Representative Date

OWNERSHIP CERTIFICATION

Please certify that the following statement is true if the individuals for all submitted Form A disclosures do not total 100% of ownership

Any remaining ownership interest is held by individuals receiving less than $106,447.20 of the bidding entity's or parent entity's distributive income or holding less than a 5% ownership interest.

☐ Yes ☐ No ☐ N/A (Form A disclosure(s) established 100% ownership)

Illinois Department of Transportation

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. Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). Paper-based bids are to be submitted to the Chief Procurement Officer for the Department of Transportation in care of the Chief Contracts Official at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 a.m.September 18, 2015 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 10:00 a.m.

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

   Contract No. 62A12
   Various Counties
   Section 2014-070-I
   Various Routes
   District 1 Construction Funds

This project consists of annual maintenance and operation of traffic signals, highway lighting, surveillance systems, pump stations and other electrical systems located within District 1.

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

Randall S. Blankenhorn,
Secretary

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2015

This index contains a listing of SUPPLEMENTAL SPECIFICATIONS, frequently used RECURRING SPECIAL PROVISIONS, and LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS.

ERRATA Standard Specifications for Road and Bridge Construction (Adopted 1-1-12) (Revised 1-1-15)

SUPPLEMENTAL SPECIFICATIONS

RECURRING SPECIAL PROVISIONS

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

TABLE OF CONTENTS

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 2014-070-I, in Various Counties, Contract 62A12 and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

CONTRACT# 62A12
VARIOUS COUNTIES
SECTION 2014-070-I
VARIOUS ROUTES

DISTRICT 1 FORMAL CONTRACT

Annual maintenance and operations of 2601 traffic signal locations, 510 highway lighting locations, 1304 Surveillance locations, 45 Pump Stations and other Planned Maintenance Locations in District One; include but not limited to electrical systems, mechanical systems, communication systems, buildings and structures for REVLAC, RACS, 20 communication huts, fiber network, layer 2 and layer 3 network equipment, alarm monitoring systems, radio systems, 57 DMS signs, 29 maintenance yards, 1650 HMLT, 20,000 light poles, 40,000 fixtures, sign lighting, HAR, I-NET, EMCMS, EMCIT. And including 7,150 ft. galvanized steel conduit; 6,000 ft electrical cable assembly; 22,600 ft. cable assemblies; 15,000 ft. fiber cable; 23 handholes; 20 inspections of standby generators; 8,000 ft. of unit duct; 50 breakaway devices; 5 lighting controllers; 100ft light pole foundation; 25 metal light pole foundations; 25 light pole kits; distribution panels, lighting, radio control equipment; 2 light towers; 1500 ft. light tower clean and paint; 60 fluorescent luminaires; wash walls at Hubbard’s Cave, 16 pump rebuilds; 213 pump vibration testing and analysis; 500 sq. yds. wet pit cleaning; 50 hrs. wet pit power wash, 12 CCTV, 12 camera poles, 22 swing gates, 3,500 ft. detector loop; 2 steel mast arm assemblies and poles; 45 LED signal heads; 6 video detection systems; 4 wireless interconnect systems; 10 single lane and 15 two lane traffic control.

STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION

DISTRICT 1 ELECTRICAL MAINTENANCE CONTRACT

62A12

FOR YEARS 2016-2018

SPECIAL PROVISIONS:

DISTRICT 1 -- ELECTRICAL MAINTENANCE CONTRACT 62A12

ARTICLE 1.0 – BIDDERS INFORMATION AND SPECIAL PRE-QUALIFICATION SUBMITTALS

1.1 Description of Work

This Contract is for the annual maintenance of the Traffic Signal System, Lighting System, Pump Station System, Surveillance System and Other Electrical Systems located within the District 1. Each of these major systems consists of many subsystems and components at various locations throughout District 1. The Electrical Maintenance contract includes the maintenance of Electrical systems, Mechanical systems, Communication systems and its buildings, structures and grounds as specified herein.

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 Contact. 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 104.01 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 Seven Hundred Thousand Dollars ($700,000) made payable to the Treasurer, State of Illinois. The proposal guaranty checks will be returned as prescribed in Section I03.03 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 twenty million dollars ($20,000,000). 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 Contractor Spare Parts Inventory in the possession of the Contractor or in the Contract Spare Parts 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 for bidders to receive additional charts and data to assist in the bidding process and to submit the Bidder's Special Qualifications requirements.

The Pre-Bid Meeting will be held at 10:30AM, Thursday, August 27, 2015

Illinois Department of Transportation

Lower level class room

201 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 present the Special Bidder's Qualifications Submittal to the Engineer by the end of the Mandatory Pre-bid meeting. The requested information is listed in points 1 through 11, as applicable to Contract article specifications herein. If the bidder's Special Qualifications submittal, as presented to the Engineer, does not meet Contract 62A12 requirements as listed herein, the bidder will not be qualified to bid on the EMC 2016.

The Special Qualifications submittal shall include:

1. Name of the bidding company and its owners and/or officers

2. An organizational chart that illustrates the structure of the organization, and relationship to the Contract, including proposed work units, divisions, and departments, with named Electrical Maintenance Contract positions and/or roles and the responsibilities of each in order to administer and perform the work as required herein. Resumes of each individual shall be provided to support their position qualifications.

3. Location and description, including square footage of:
   - Bidder's Current Headquarters
   - Proposed EMC Office
   - Proposed EMC Dispatch Center
   - Proposed Shop Facilities

4. The name of the proposed Fleet Management software for this Contract and details of its operations to meet the Contract requirements herein.

5. A report which provides the number, type, year of manufacture of vehicles in use in the bidder's current operations, and the number of any additional vehicles to be purchased or leased for work on this Contract.

6. A report which summarizes the number and types of maintenance/construction equipment currently owned or leased by the bidder and quantity and name of additional equipment to be purchased or leased for work on this Contract.

7. A report which details the bidder's in-house familiarity and capability in installing and maintaining CCTV and video distribution systems.

8. 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 9.0)

9. A report which describes the bidder's in-house work on fiber optic systems. (Section 1, Article 9.0)

10. A statement signed by the bidder that:

    - He/she has read the EMC 2016 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

Bureau of Traffic, Electrical Maintenance Section

445 Harrison Street, Oak Park, IL 60304

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 62A12.

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 – SCHEDULE OF PRICES

QUANTITIES OF EQUIPMENT TO BE MAINTAINED:

System Code	System	Number of Locations
L	Lighting	510
P	Pump Stations	45
S	Surveillance	1304
T	Traffic Signals	2601
Planned Maintenance Location *		290

Total Number of Locations: 4750

Fixed Monthly Routine Maintenance Payment: $_____

ROUTINE MAINTENANCE LUMP SUM BID PRICE TO MAINTAIN EQUIPMENT AT LOCATIONS LISTED HEREIN:

LUMP SUM PER MONTH		YEARLY AMOUNT
$	X 12 months/year	**$**

* Additional locations which will be maintained by the Contractor during this Contract. Refer to Section 3 for list of Planned Maintenance Locations.

Item	Item Description	Units	Quantity	Unit Cost	Extension
GAC1	Aerial Cable, with Messenger Wire, 4-1/C up to No. 2	Ft	2,200	$	$
GAS1	Asphalt, Remove and Replace	SF	500	$	$
GC01	Conduit, Galvanized Steel, Attached to Struct. 3/4 to 1 1/4"	Ft	2,000	$	$
GC02	Conduit, Galvanized Steel, Attached to Struct. 1 1/2" to 2 1/2"	Ft	1,000	$	$
GC03	Conduit, Galvanized Steel, Attached to Struct. 3" to 5"	Ft	300	$	$
GC04	Conduit, Galv. Steel, PVC Coated Attached to Struct. 3/4 to 1 1/4"	Ft	500	$	$
GC05	Conduit, Galv. Steel, PVC Coated Attached to Struct. 1 1/2" to 2 1/2"	Ft	1,000	$	$
GC06	Conduit, Galv. Steel, PVC Coated Attached to Struct. 3" to 5"	Ft	250	$	$
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	300	$	$
GC09	Conduit, Galvanized Steel, in Ground, 3/4 to 2 1/2"	Ft	1,000	$	$
GC10	Conduit, Galvanized Steel, In Ground, 3" to 5"	Ft	300	$	$
GC11	Conduit, Non-Metallic, Coilable, in Ground, 1 1/4"	Ft	1,000	$	$
GC13	Conduit, PVC, for Buildings, 1", Schedule 40	Ft	300	$	$
GC14	Conduit, Removal	Ft	2,000	$	$
GCC1	Controller, Calcium Chloride Pump	Ea	5	$	$
GCX1	Coaxial Cable	Ft	500	$	$
GE01	Electric Cable Assembly, XLP, 3/C No. 2, 1/C No. 6 Green	Ft	1,000	$	$
GE02	Electric Cable Assembly, XLP, 3/C No. 4, 1/C No. 6 Green	Ft	1,500	$	$
GE03	Electric Cable, XLP, 1/C up to No. 6	Ft	5,000	$	$
GE04	Electric Cable, XLP, 1/C No. 4 to No. 1	Ft	5,000	$	$
GE05	Electric Cable, XLP, 1/C No. 1/0 to No. 2/0	Ft	3,000	$	$
GE06	Electric Cable, XLP, 1/c No. 3/0 to No. 4/0	Ft	1,000	$	$

GE07	Electric Cable, XLP, 1/C 250 MCM to 500 MCM	Ft	600	$	$
GE08	Electric Cable, Pull or Remove	Ft	5,000	$	$
GE09	Electric Cable, THWN, 1/C from No.14 to No.10	Ft	5,000	$	$
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 & 24 SM	Ft	5,000	$	$
GF04	Fiber Optic Termination Panel 12F or 24F	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 I	Ft	20	$	$
GFR1	Foundation Removal	Ea	35	$	$
GGR1	Ground Rod	Ea	40	$	$
GH01	Handhole	Ea	10	$	$
GH02	Handhole, Fiber Optic	Ea	5	$	$
GH03	Handhole, Heavy-Duty	Ea	4	$	$
GH04	Handhole, Heavy-Duty, Double	Ea	2	$	$
GH05	Handhole, Heavy-Duty, Special	Ea	2	$	$
GH06	Handhole, Remove	Ea	20	$	$
GH07	Handhole, Re-build	Ea	5	$	$
GH08	Handhole, Re-build Existing to Heavy-Duty Type	Ea	5	$	$
GIG1	Inspection, Standby Generator	Ea	20	$	$
GIT1	Inspection, Thermo Graphic	Ea	2	$	$

GJ01	Junction Box, and all Appurtenances, Remove	Ea	5	$	$	
GJ02	Junction Box, Stainless Steel, up to 6" Depth	Ea	15	$	$	
GJ03	Junction Box, Stainless Steel, 8" Depth	Ea	5	$	$	
GLH1	Certified Electrician/Journeyman	Hr	500	$	$	
GLH2	IT Support	Hr.	650	$	$	
GLH3	Maintenance Helper	Hr.	500	$	$	
GPC1	Pump, Calcium Chloride	Ea	5	$	$	
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	300	$	$	
GSO1	Sodding	SF	500	$	$	
GTC1	Single Lane, Traffic Control	Ea	10	$	$	
GTC2	Two Lane, Traffic Control	Ea	15	$	$	
GU01	Uniduct, XLP, 3/c No. 6 & 1/c No. 8 Green, 1"	Ft	3,000	$	$	
GU02	Uniduct, XLP, 3/c No. 4 & 1/c No. 6 Green, 1 1/4"	Ft	3,000	$	$	
GU03	Uniduct, XLP, 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	LS	1	$ 75,000.00	$ 75,000.00	*
GV02	Vendor Budgetary Allowance, Operational Support	LS	1	$ 75,000.00	$ 75,000.00	*
GWR 1	Welding Receptacle, 3 Pole, 30 Amp, Furnish and Install	Ea	2	$	$	
GWR 2	Welding Receptacle, 3 Pole, 60 Amp, Furnish and Install	Ea	2	$	$	
LA01	Arm or Twin Arm with Luminaire, Install Only	Ea	10	$	$	
LB01	Breakaway Device, T-Base	Ea	50	$	$	

LBB1	Breaker, Branch, 20A to 70A	Ea	20	$	$
LBB2	Breaker, Main, 60A to 100A	Ea	3	$	$
LBB3	Breaker, Main,125A to 175A	Ea	2	$	$
LBT1	Buck Boost Transformer	Ea	2	$	$
LC01	Controller, Duplex Console, with Radio	Ea	4	$	$
LC02	Controller, Duplex Console, Without Radio	Ea	1	$	$
LC03	Controller, Lighting, Install only	Ea	4	$	$
LC04	Controller, Lighting, Remove & Salvage	Ea	3	$	$
LC05	Controller, Single Door Console, Without Radio	Ea	2	$	$
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	3	$	$
LD01	Decal Set, Lighting Unit, Pole	Ea	200	$	$
LD02	Decal Set, Lighting Unit, Tower	Ea	200	$	$
LD03	Decal Set, Lighting Unit, Tunnel or Underpass with Bracket	Ea	200	$	$
LD04	Decal Set, Lighting Unit, Tower with Camera	Ea	200	$	$
LDS1	Disconnect Switch	Ea	5	$	$
LDS2	ON/OFF Switch	Ea	20	$	$
LDS3	Motion Sensor	Ea	15	$	$
LE01	Electrical Outlet, GFCI Type	Ea	30	$	$
LE02	Convenience Receptacle, 20 Amp	Ea	20	$	$
LF01	Foundation, Light Pole	L. Ft	100	$	$
LF02	Foundation, Light Pole, Metal	Ea	25	$	$
LF03	Foundation, Light Tower, up to 54" Dia.	L. Ft	100	$	$

LF04	Foundation, Lighting Controller	Ea	5	$	$
LP01	Light Pole, Kit	Ea	25	$	$
LP02	Light Pole Unit, Install only	Ea	50	$	$
LP03	Light Pole Unit, Removal & Salvage	Ea	50	$	$
LP04	Wood Pole Unit, Install only	Ea	25	$	$
LP05	Wood Pole, Removal & Salvage	Ea	30	$	$
LPN1	Panel, Distribution	Ea	5	$	$
LT01	Light Tower, 110' or less	Ea	1	$	$
LT02	Light Tower, 111' or more	Ea	1	$	$
LT03	Light Tower, in Place, Clean and Paint	Ft	1,500	$	$
LT04	Light Tower, Remove and Re-erect	Ea	3	$	$
LT05	Light tower, Install only	Ea	3	$	$
LU01	Luminaire, Fluorescent Eight (8) Ft.	Ea	15	$	$
LU02	Luminaire, Fluorescent Four (4) Ft.	Ea	15	$	$
LU03	Luminaire, Fluorescent, HighBay	Ea	15	$	$
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	25	$	$
LU08	Luminaire, Navigation LED	Ea	5	$	$
LU09	Luminaire, Removal & Salvage	Ea	50	$	$
LU10	Luminaire Shield, Pole	Ea	15	$	$
LU11	Luminaire Shield, Tower	Ea	10	$	$
LU12	Luminaire, Tower, Install only	Ea	15	$	$

LU13	Luminaire, Two Lamp Fluorescent, Install only	Ea	15	$	$
LU14	Luminaire, Wall, Underpass or Tunnel, Install only	Ea	15	$	$
LU15	Luminaire, HPS, Pole	Ea	20	$	$
LU16	Luminaire, HPS, Tower	Ea	10	$	$
LU17	Luminaire, Metal Halide	Ea	3	$	$
LU18	Emergency/Exit Light Fixture	Ea	10	$	$
LW01	Wash Hubbard's Cave Tiled Tunnels Walls	Ea	2	$	$
LW02	Wash & Relamp Hubbard's Cave Luminaires	Ea	1177	$	$
LWR1	Wash & Relamp, HPS Lamps	Ea	4200	$	$
LWR2	Wash & Relamp, LPS Lamps	Ea	1050	$	$
LWR3	Wash & Relamp, Fluorescent Lamps	Ea	2300	$	$
LWR4	Wash & Relamp, Metal Halide Lamps	Ea	100	$	$
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	3	$	$
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	$	$
PI05	Inspection, Motor Starter, Soft Start Type	Ea	5	$	$
PI08	Inspection, Backflow Preventer	Ea	8	$	$
PI09	Inspection, Pump	Ea	25	$	$

PM01	Pump Motor Balancing	Ea	6	$	$	
PRB1	Pump Rebuild, Type 1	Ea	1	$	$	
PRB2	Pump Rebuild, Type 2	Ea	4	$	$	
PRB3	Pump Rebuild, Type 3	Ea	1	$	$	
PRB4	Pump Rebuild, Type 4	Ea	8	$	$	
PRB5	Pump Rebuild, Type 5	Ea	1	$	$	
PRB6	Pump Rebuild, Type 6	Ea	1	$	$	
PS03	Pump, Vibration Testing and Analysis	Ea	213	$	$	
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	*
PW01	Wet Pit, Cleaning	SY	500	$	$	
PW02	Wet Pit, Power Wash	Hr	50	$	$	
RMA1	Routine Maintenance Allowance	LS	1	$400,000.00	$ 400,000.00	*
RML1	Routine Maintenance Location	Ea	321	$	$	
SAI1	Surveillance Ramp Metering Inspection & Cleaning	Ea	118	$	$	
SB01	8" LED Beacon, Flashing, Low Mount,1 Face	Ea	88	$	$	
SC03	Cabinet, Type 3, for Surveillance	Ea	3	$	$	
SCC1	CCTV Dome Camera assembly, Color, PTZ Control, HD	Ea	12	$	$	
SCC2	Camera and Cabinet Control Maintenance	Ea	300	$	$	
SCC3	Camera Lowering Device	Ea	4	$	$	
SCC4	CCTV Camera Pole	Ea	12	$	$	
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	1,500	$	$	

SD04	DMS inverter and batteries, Skyline DMS	Ea	3	$	$	
SD05	Inductive Loop Detector amp 2-channel rack mount	Ea	170	$	$	
SDS1	Portable DMS Sign Trailer	Ea	2	$	$	
SE01	Electric Service Upgrade and Grounding	Ea	5	$	$	
SE02	Electrical Cable in Conduit, 4/c No. 18, Shielded Loop Detector	Ft	5,000	$	$	
SE03	Ethernet Media Converter	Ea	3	$	$	
SE04	Ethernet Managed Switch	Ea	3	$	$	
SI01	Inspection, Automatic Suppression System	Ea	2	$	$	
SRR1	Restraining Barrier Tape Cartridge, New	Ea	2	$	$	
SRR2	Restraining Barrier Dragnet Assembly, Furnish Only	Ea	2	$	$	
SS01	Signal Head, 1 Face	Ea	176	$	$	
SS02	Signaling Load Relay, Mechanical	Ea	88	$	$	
SSG1	Swing Gate Arm, 2' to 4', Furnish Only	Ea	2	$	$	
SSG2	Swing Gate Arm, 5' to 8', Furnish Only	Ea	4	$	$	
SSG3	Swing Gate Arm, 9' to 12', Furnish Only	Ea	4	$	$	
SSG4	Swing Gate Arm, 13' to 16', Furnish Only	Ea	4	$	$	
SSG5	Swing Gate Arm, 17' to 20', Furnish Only	Ea	4	$	$	
SSG6	Swing Gate Arm, 21' to 23', Furnish Only	Ea	4	$	$	
ST01	TELCO Suppression	Ea	20	$	$	
ST02	Telecommunication Cable, Inline Connectors & Termination	Ea	45	$	$	
ST03	Telecommunication Cable, No. 19/ 3 Pair	Ft	1,500	$	$	
ST04	Telecommunication Cable, Install Only	Ft	1,500	$	$	
SU01	UPS System, Inspection	Ea	1	$	$	
SVB1	Budgetary Allowance For Replacement PLC Repair	LS	1	$ 70,000.00	$ 70,000.00	*
SVB2	Budgetary Allowance For Communication Sys. Repair	LS	1	$ 80,000.00	$ 80,000.00	*

SVB3	Budgetary Allowance For Building & Equip. Repair	LS	1	$ 60,000.00	$ 60,000.00	*
SVB4	Budgetary Allowance For Ramp Gates	LS	1	$ 70,000.00	$ 70,000.00	*
TC01	Full-Actuated Controller in Type IV Cabinet	Ea	2	$	$	
TC02	Full-Actuated Controller in Type V Cabinet	Ea	2	$	$	
TC03	Full-Actuated Controller in Type IV or V Cabinet W/RR Equipment	Ea	1	$	$	
TC04	Full-Actuated Controller	Ea	5	$	$	
TC05	Install Existing Traffic Signal Controller	Ea	5	$	$	
TC06	Install Existing Traffic Signal Controller and Cabinet	Ea	2	$	$	
TC07	Controller and Cabinet Modification	Ea	5	$	$	
TC08	Fiber Optic Communications Control Equipment	Ea	2	$	$	
TC09	Traffic Signal Master Controller	Ea	1	$	$	
TC10	Install Telephone Line and Modem	Ea	2	$	$	
TC11	Install Updated PROM Set at Existing Local or Master Controller	Ea	15	$	$	
TC12	UPS System	Ea	1	$	$	
TD01	Drill Existing Handhole	Ea	20	$	$	
TE01	Electric Cable No. 14 2/C	Ft	1,000	$	$	
TE02	Electric Cable No. 14 3/C	Ft	2,000	$	$	
TE03	Electric Cable No. 14 5/C	Ft	2,000	$	$	
TE04	Electric Cable No. 14 7/C	Ft	2,000	$	$	
TE05	Electric Cable No. 14 2/C, Twisted Shielded	Ft	3,000	$	$	
TE06	Electric Cable No. 18 3 Pair, Twisted Shielded	Ft	200	$	$	
TEC1	Electric Cable in Conduit, Tracer No. 14 1/C	Ft	1,000	$	$	
TEC2	Electric Cable No. 14 3/C Railroad	Ft	500	$	$	
TF01	Concrete Foundation, Type A	Ft	36	$	$	

TF02	Concrete Foundation, Type D	Ft	24	$	$
TF03	Concrete Foundation, Type C	Ft	24	$	$
TF04	Concrete Foundation, Type E, 30" Diameter	Ft	60	$	$
TF05	Concrete Foundation, Type E, 36" Diameter	Ft	60	$	$
TF06	Concrete Foundation, Type E, 42" Diameter	Ft	60	$	$
TF07	Concrete Foundation, Rebuild/Modify,Type D	Ea	1	$	$
TFB1	Flashing Beacon, Post Mounted, 1 Face	Ea	6	$	$
TFB2	Flashing Beacon, Solar, Post Mounted, 1 Face	Ea	10	$	$
TGS1	Additional Grounding & Electric Service Upgrade	Ea	5	$	$
TL01	Inductive Loop Detector	Ea	32	$	$
TL02	Detector Loop	Ft	3,500	$	$
TMA1	Steel Mast Arm Assembly and Pole, 16' to 28'	Ea	1	$	$
TMA2	Steel Mast Arm Assembly and Pole, 30' to 44'	Ea	1	$	$
TMA6	Relocate or Install Existing Mast Arm Assembly and Pole	Ea	2	$	$
TPP1	Pedestrian Pushbutton Post, Galvanized Steel	Ea	5	$	$
TPP2	Pedestrian Pushbutton Latching and Non-Latching	Ea	10	$	$
TR01	Rotate Signal Phasing at an Existing Traffic Signal Intersection	Ea	5	$	$
TR02	Re-assign System Detectors	Ea	5	$	$
TSB1	Traffic Signal Backplate, Reflective	Ea	50	$	$
TSD1	LED Signal Display	Ea	10	$	$
TSL1	LED Signal Head, 1 Face, 3 Section	Ea	5	$	$
TSL2	LED Signal Head, 1 Face, 4 Section	Ea	5	$	$
TSL3	LED Signal Head, 1 Face, 5 Section	Ea	2	$	$
TSL4	LED Signal Head, Optically Programmed, 1F, 3 Section	Ea	2	$	$
TSL5	LED Signal Head, Optically Programmed, 1F, 5 Section	Ea	2	$	$

TSL6	LED Signal Head, Remotely Steerable Optics, 1F, 3 Section	Ea	2	$	$
TSL7	LED Signal Head, Remotely Steerable Optics, 1F, 5 Section	Ea	3	$	$
TSL8	LED Pedestrian Signal Head, 1 Face	Ea	8	$	$
TSL9	LED Pedestrian Signal Head, Countdown, 1 Face	Ea	16	$	$
TSR1	Remove Signal Section or Head	Ea	6	$	$
TSR2	Relocate or Install Existing Signal Head	Ea	16	$	$
TT01	Span Wire Traffic Signal Installation with Electric Service and UPS	Ea	2	$	$
TTM1	Thermoplastic Pavement Marking Line, 24"	Ea	500	$	$
TTP1	Traffic Signal Post, 10' to 18'	Ft	10	$	$
TTP2	Remove Traffic Signal Post	Ea	2	$	$
TTP3	Remove Mast Arm Assembly and Pole	Ea	2	$	$
TVD1	Video Detection System, Complete Intersection	Ea	1	$	$
TVD2	Video Detection System, Single Intersection Approach	Ea	5	$	$
TWD1	Wireless Detection System Complete Intersection	Ea	1	$	$
TWD2	Wireless Detection System Single Approach	Ea	4	$	$
TWD3	Radar Detection System Single Approach Stop Bar Detection	Ea	6	$	$
TWD4	Radar Detection System Single Approach Stop Bar Advanced Detection	Ea	2	$	$
TWI1	Wireless Interconnect System	Ea	1	$	$

Sub-Total Non-Routine: $ _____

Routine Maintenance/YR (RM/YR)= $ _____

Total Contract Bid Price (Routine + Non-Routine): $ _____

*** Non-biddable Pay Items**

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 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 contract spare parts 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, 2016. The Contractor shall coordinate access to perform maintenance and continued operation of IDOT equipment and systems.

The list of locations and description of items provided herein in each System and in Section 3 are for bidding purposes only. Actual quantities and material to be maintained is the responsibility of the Contractor as of January 1, 2016. The Contactor will be provided with a hard copy list of current locations to be maintained as of January 1, 2016. The Contractor shall inspect all locations to assure continued maintenance and operation of all systems specified in this Contract. The Contractor shall be given access to all locations for inspection and shall provide a punch list of all items found prior to the day of transfer.

3.1.1 TERM OF CONTRACT

The Contract shall be valid for operations from 12:00 a.m. on January 1, 2016 to 12:00 a.m. (midnight) on December 31, 2016, 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. All routine and non-routine contract work shall be completed.

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.

The Department will withhold the December routine monthly payment at the end of the contract year prior to termination until all routine and non-routine work is completed, even following the completion of routine maintenance response requirements.

3.1.2 RENEWAL

The Department has the sole discretion to renew this contract for two (2) additional terms. The Contract shall be terminated and closed if not renewed at the end of each contract year. The first renewal would extend the Contract for one additional term from 12:00 a.m. January 1, 2017, to 12:00 a.m. (midnight) December 31, 2017, per all revisions or amendments as defined. The second renewal would extend the Contract for one final term from 12:00 a.m. January 1, 2018, to 12:00 a.m. (midnight) December 31, 2018, per all revisions or amendments as defined.

The Contract shall be terminated and closed December 31, 2018 without extensions or renewal.

All routine and non-routine contract work shall be completed by the contract end 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
- Requests for Sub-Contractor Approval, form BC260-A for each desired new sub-contractor to be utilized in the renewal year.

- A current list of all approved sub-contractors with contact information.
- A new Disadvantaged Business Utilization Plan for the renewal year on Department form SBE 2026, and DBE Participation Commitment Statement on Department form SBE 2025 (which must be approved by the Department prior to the start of the renewal year work). The original copy shall be sent directly to the EEO office and a copy to the EMC Engineer.
- 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 renewal provision is exercised by the State, the renewal shall not relieve the Contractor from the requirements to complete work from the prior 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, 2016 routine maintenance payment (or last month of the Contract renewal) 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 CANCELLATION OF WORK

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 Contract Spare Parts 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. The complete package shall be sent directly to the EEO office and a copy to the EMC Engineer.

New requests for Approval of Subcontractor, form BC260A, after the start of the Contract shall be immediately sent to the Engineer.

Monthly DBE Report

The Contractor shall submit to the Engineer with the monthly routine work submittal the Monthly DBE Report and DBE invoices. The report shall consist of an Excel spreadsheet listing the invoiced service work (or material purchases) by each sub-contractor by month. The information provided shall include, but is not limited to:

- Date invoice received
- Invoice number
- Date invoice paid
- Invoice amount
- System
- Routine or non-routine work
- Dates of routine work (starting and ending)
- Non-routine authorization number
- Applicable non-routine pay items used
- A copy of any new requests for Approval of Subcontractor, form BC260A

- A copy of the vendor catalog/printout associated with equipment furnished in detail with vendor information, part #, product #, serial number and description.

The Contractor shall provide copies of all DBE invoices. The Contractor shall label all items on each invoice by type of EMC work; a ticket number or maintenance program for routine work, or the authorization number for pay item or agreed price work. Invoices $5,000 and above shall have location of the work performed and/or equipment installation location. All material purchased shall have catalog cuts for IDOT approval and records. An Excel spreadsheet with proper format will be provided for the Contractor's use at the pre-construction meeting.

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 an 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, 2016 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, 2015. The Contractor shall submit all outstanding items to the Engineer within 72 hours of the inspection.

3.3.3 CONTRACT SPARE PARTS TRANSFER

During the last half of December, 2015 the Contractor shall prepare facility storage areas as specified herein for delivery of miscellaneous contract spare parts not stored in the contract spare parts warehouse. The Engineer shall provide the Contractor a list of the contract spare parts prior to delivery.

3.3.4 CONTRACTOR OWNED SPARE PARTS PROCUREMENT

After execution of the Contract, the Contractor shall procure 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, 2016. 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.

Homeland security 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 CONTRACT SPARE PARTS INVENTORY RETURN

The Contractor shall provide the Engineer on December 1, 2016 (or December 1 of renewal year if this contract is renewed) a list of all contract spare parts inventory and its applicable location that is in his possession on that day. All contract spare parts 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 by December 15th. 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 contract spare parts 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.

3.5 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 e-mail or 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 notification, 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 withhold all or a portion of the monthly routine maintenance payment due to the Contractor until the work meets Contract specifications and is completed and approved by the Engineer.

After 30 working days from initial notification of Unsatisfactory Work the Contractor cannot meet or perform routine or non-routine work per contract specifications, it will be the Engineer's option to authorize a new (3rd Party) vendor or contractor to complete or perform the work. The Engineer shall deduct from the Contractor monthly routine maintenance payment as liquidated damages a 3rd Party contractor/vendor quote to perform the work. Where unit prices of pay items are below actual cost of 3rd party work

the authorization will be de-authorized and the remainder will be deducted from monthly routine maintenance payment.

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 a one-time charge will be assessed, and whether one or multiple liquidated damages can be assessed for one incident. Liquidated damages shall be assessed for missed patrols.

Liquidated Damage Assessment

PER DAY	PER INCIDENT	PER CONTRACT SPECIFICATIONS:
$500.00	$1,000.00	IMPROPER TRAFFIC CONTROL
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 (QUOTES, BREAKDOWN OF WORK PERFORMED, VENDOR PAID INVOICE, 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 (PATROL, INSPECTION, ETC.)
$ 200.00	$ 500.00	FAILURE TO FOLLOW SPECIFIED PROCEDURES
$ 200.00	$ 500.00	FAILURE TO PROVIDE PROPER STAFFING OR EQUIPMENT
$ 200.00	$ 500.00	IMPROPER USE OF MATERIALS OR METHODS
$ 500.00	$ 1,000.00	FAILURE TO REPLACE CONTRACT SPARE PARTS
$ 500.00	$ 3,000.00	FAILURE TO RETURN CONTRACT SPARE PARTS 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 14, 2015, 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. All EMC personnel shall have access to EMCMS and EMCIT for daily work and suitable printers at their workstation/desk.

One desk shall be dedicated for use by IDOT personnel only and this space shall have a chair, working telephone, EMCMS and EMCIT service ability, laser printer capable of printing from IDOT personnel laptops and from the EMCMS and EMCIT, four (4) drawer file cabinet with padlock and six (6) keys furnished to the Engineer for Department personnel only.

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 have an established 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 dispatch center shall be in full operation and fully staffed as specified herein at the start of contract January 1, 2016.

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 EMCIT, 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 systems. 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.

In addition to the Lighting System SCADA, Pump Station SCADA, AEGIS alarm monitoring, and Traffic Signal CLMS monitoring, equipment for REVLAC , RACS, SolarWinds, 360VDS monitoring will be placed by the Contractor in the EMC Dispatch Center for Contractor Dispatch personnel to monitor alarms and dispatch response personnel as necessary.

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 under this contract. These facilities shall be adequately equipped with instruments, test rigs and tools necessary for the work.

The traffic signal portion of the facility shall be able to handle a minimum of, but not limited to, 100 controllers, 1230 MMU and auxiliary failures a year, which includes electrical-mechanical, solid-state analog, solid state digital, and microprocessor equipment.

3.6.5 STORAGE FACILITIES

3.6.5.1 CONTRACT SPARE PARTS WAREHOUSE STORAGE FACILITY

To facilitate security and inventory control of Department owned large equipment many contract spare parts are currently housed at a commercial bonded warehouse at Combined Warehouse Co., 5000 South Central, Chicago, Illinois, 60638 (hereafter referred to as the contract spare parts storage facility). The Contractor shall obtain a minimum of 7,000 square feet of rental storage space at Combined Warehouse Co., or an Engineer approved contract spare parts storage facility. Once accepted as the official contract spare parts storage facility for this Contract any change in the facility or its requirements shall require approval of the Engineer.

The contract spare parts warehouse storage facility 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 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. The Contractor shall also complete Disposition Logs, Transactions Summaries, and official monthly EMC Inventory documentation of contract spare parts warehouse materials.

All costs for the contract spare parts warehouse storage facility and reporting shall be included in routine maintenance. If the Engineer requests additional warehouse storage space, the Contractor shall be reimbursed through non-routine maintenance at the same rate per sq. ft. as the approved contract spare parts warehouse storage facility.

The Contractor shall have the option of retaining storage at the existing contract spare parts 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 contract spare parts warehouse. All costs associated with any transfer of contract spare parts inventory from the existing contract spare parts warehouse to an approved alternate warehouse shall be borne by the Contractor, and no additional compensation will be allowed.

3.6.5.2 CONTRACTOR STORAGE FACILITIES

In addition to the designated warehouse, the Contractor shall have and furnish sufficient and adequate types of material storage areas, both indoor and outdoor. The Contractor shall obtain Engineer approval for all contract spare parts storage locations and facilities. Department owned contract spare parts shall be kept screened or fenced, with locked access. All contract spare parts inventory shall be clearly identified as Department owned and shall be physically separated from the storage of Contractor-owned materials and equipment.

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.

In one designated area of the Contractor facility, the Department owned spare parts indoor storage shall have a locked cage with sturdy racks and/or shelving sufficient in number to shelve and house materials and equipment for use on this Contract, for department owned spare parts. A minimum of 200 sq. ft. of the indoor caged, locked storage, and racks of Department owned materials shall be environmentally controlled, a clean environment suitable for storage of network switches, CCTV, and other electronic equipment items needing special regulated temperatures.

3.6.5.3 SPECIAL HANDLING OF WOOD LIGHT POLES

All wood poles which are contract spare parts shall be stored outside in fenced, locked areas. With the approval of the Engineer designated Department yard facilities are allowed for storage. All poles shall be laid flat, on top of a platform/bed made from the most deteriorated wood poles. They shall be off ground, and organized into groups by length. Each pole shall be tagged with two (2) stainless steel asset tags, 4” by 2”, with two holes for attachment to the pole with 3” stainless steel, ring shank nails or screws. One tag shall be nailed to the bottom and one tag at the twenty (20) foot height of the pole from the bottom. The tags shall be laser engraved/punched with the length of the pole in feet. This special handling requirement of wood light poles applies to all wood poles in contract spare parts stored locations as of January 1, 2016. All materials, labor and equipment necessary for this contract requirement are incidental to routine maintenance.

3.6.5.4 INSURANCE AND INSPECTIONS

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

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

3.6.5.5 INVENTORY REQUIREMENTS

The Contractor shall use contract spare parts only when directed and approved by the Engineer. The Department is not obligated to furnish specific materials, parts or equipment in the Department's inventory of contract spare parts for Contractor use.

The Contractor is responsible, under routine maintenance, for the storage and inventory reporting of the Department owned contract spare parts; stock of materials, parts, and equipment.

The Contractor is responsible for timely, safe transportation and handling to deliver designated Department contract spare parts inventory from any stock warehouse, Contractor shops or sites, or other approved state work sites within District 1, to approved Contractor or other work sites within District 1. The Contractor shall also provide all labor and equipment as necessary to relocate any IDOT equipment from a contract location (facility) to new facilities as directed by the Engineer.

The Contractor shall designate one individual to be responsible for all disposition, salvage, and monthly reporting of Department owned spare parts. This individual shall be named at the Pre-Construction Meeting.

3.6.5.6 SPARE PARTS QUALITY CONTROL

In order to assure that only materials in good working order and/or condition shall be placed in the contract spare parts warehouse or other storage location as approved by the Engineer, the Contractor shall provide sufficient trained personnel to inspect the materials, separate salvage materials, and/or box/wrap/categorize the various in-coming materials, and provide shelf storage as applicable.

If the Engineer directs the Contractor to receive materials into the contract spare parts 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/parts/equipment must be moved, at Contractor expense, to the Engineer approved storage location within five working days of the receipt of materials. The Spare Parts Disposition Log shall report all transactions.

3.6.5.7 SPARE PARTS DISPOSITION LOG

The Contractor shall use the most current issue of the Contract Spare Parts Disposition Log for all transactions involving Department owned materials, parts, and equipment, transferred in or out of a spare parts storage location or field installation. The form shall be issued to the Contractor at the Pre-Construction Meeting. Information required on the Disposition Log includes, as applicable:

- Database Location Number
- Main Route and Cross Street
- Cabinet Number
- Ticket Number
- Authorization Number
- Construction Contractor Name
- Construction Project
- Construction Contract Number or Permit Number
- Construction Location
- Designation of “Return to IDOT”, “Pick-Up”, or “Reserve of Materials”
- Spare Parts Transfer Code
- Electrical System
- Electrical System Item Sort Code
- Item Description per Inventory name
- Item Manufacturer, Model #, and Serial Number
- Quantity Transferred In or Out
- Designation of “New” or “Used” item
- Designation of Routine or Non-Routine Work
- Name of EMC Representative present at Transaction Completion

The Contractor shall email the Department Area Engineer/Technician a Spare Parts Disposition Log requesting the use of contract spare parts. The Contractor may not complete the transfer of Department owned items until the signed, approved Disposition Log is received from the Engineer or Engineer assigned Department representative. When new materials as purchased by the Department are received by the Contractor a Disposition Log shall be completed to indicate the materials were received and placed in an approved contract spare parts storage location. All Disposition Logs for the month shall be sorted by electrical system and transmitted with the monthly Transactions Summary in the monthly routine work submittal.

3.6.5.8 SPARE PARTS USE/REPLACEMENT BY THE CONTRACTOR

If the Contractor receives Engineer approval to use Department owned contract spare parts the original Spare Parts Disposition Log shall reflect the Ticket number for routine work or the authorization letter number for non-routine work. The Ticket shall remain open until the contractor replaces the contract spare parts items. Replaced contract spare parts items require a submittal of the original (usage) Disposition Log, the

replacement Disposition Log with the item(s) invoice and shipping receipt(s) Disposition Log or the Contractor shall be assessed liquidated damages of the purchase and replacement of the used contract spare parts items. All paperwork shall be transmitted to the Engineer monthly in the routine maintenance work submittal.

3.6.5.9 DISPOSAL OF SCRAP

The Engineer shall have the sole determination as to whether material (equipment) is re-usable as system equipment. 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, (normally on the Disposition Log).

The Contractor shall email the Department Area Engineer/Technician a Spare Parts Disposition Log requesting Engineer approval of items to be scrapped. The Disposition 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 Disposition Log and convey ownership of the scrap materials to the Contractor.

All costs for disposal of scrap as ordered by the Engineer are incidental to routine maintenance. 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 routine maintenance bid price.

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.

3.6.5.10 CONTRACT SPARE PARTS AUDIT

The Contractor shall conduct an audit of all contract spare parts inventory as of January 4, 2016. After approval signature of the principal of the company and the Engineer, the Contractor shall have full responsibility for the Department owned contract spare parts inventory for the duration of the contract, including all documentation; Disposition Logs, Transactions Reports, and Inventory reports for each system.

3.6.5.11 CONTRACT SPARE PARTS DOCUMENTATION

Transaction Summary Report

Each month the Contractor shall record the information from the Disposition Logs on an Excel spreadsheet. Each transaction shall be listed by:

- Date
- System
- Transfer Code
- Location item was taken from
- Current Location of item
- Item Sort Code
- Item Code
- Item Name, Model and/or Serial number
- Ticket and/or Authorization number
- Quantity In or Out
- Quantity New or Used
- Quantity Reserved
- Quantity Out for Repair
- Quantity of Newly Purchased Items
- Quantity of Items Scrapped

The monthly Transaction Summary Report shall be approved by the Contractor's appointed supervisor/manager for the applicable system and then transmitted to the Department in the monthly routine work submittal. The Transaction Summary Report shall be reviewed at the monthly System meetings.

Official Inventory Reports

Once the Transaction Summary Reports have been approved by the Engineer the Contractor shall enter the data in the official Contract Reporting System. Currently this system consists of Excel spreadsheets for each system with the following information:

- Current Location
- System
- Warehouse Code if applicable
- Sort Code
- Item Number
- Item Description
- Type/Style/Material
- Manufacturer
- Model #
- Serial #

- Quantity Available Prior Month (New/Used/Total)
- Transactions from Past Month (Plus or Minus)
- Quantity Available in Current Month (New/Used/Total)
- Criteria Unique to a particular System (Where Used, Reserved Quantity, etc.)

The official Inventory requires significant time to complete as each item with its model number and serial number must have the transaction correctly recorded; since accuracy is vital. Each month the Contractor project manager shall sign and approve the official Contract Spare Parts Inventory to certify its accuracy prior to its transmittal in the monthly routine work submittal.

Inventory Accuracy

It is highly suggested that the project manager put into place key individuals to review the official inventory reports before his sign-off approval, since the inventory will be used as the official record of available contract spare parts. If any discrepancies are found in the official inventory and/or if the spare part is listed as available but cannot be found, the Contractor will be required to take another full physical review of each system inventory item on the official Inventory within fourteen (14) days and replace any items not found, at no cost to the Department. Any personnel assigned to the re-counting shall not take the place of any personnel assigned to other scheduled work, scheduled preventive maintenance program, or scheduled patrol.

The Contractor shall also reconcile the monthly inventory as issued by the leased warehouse to the official Department Inventory Reports and shall notify the Engineer of any discrepancies.

The Contractor is required to retain all inventory records for a period of seven (7) years following the completion of the Contract.

Inventory Software

The Contractor is urged to consider a Windows based packaged software with a web based application, a Contractor owned or contracted service but available for viewing by Department personnel 24/7, to replace the Excel spreadsheets currently in use. The Engineer will review any proposed packages and approve the software if it meets the current specifications of the reports now in place.

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/Foremen 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., Ms. Lisa Heaven-Baum.

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:

Mr. John Fortmann, P.E.
Deputy Director of Highways,
Regional One Engineer
Illinois Department of Transportation, District 1
Attn: Ms. Lisa Heaven-Baum, P.E.
Acting 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 and may be made directly to the parties involved. EMC 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. Managers and administrative personnel shall normally communicate with the IDOT System Engineers and Technicians.

The Contractor shall furnish and install an FTP server to transmit and receive files with IDOT Engineer(s) through a secure access, and it shall be available 24/7. The files shall

be accessible and in a format that allow modification on Excel, Word or as approved by the Engineer.

3.7.4 WORK SYSTEM STATUS MEETINGS

Work System status meetings may be requested by the Engineer or the Contractor. These meetings shall be held at a minimum once per month for each system, normally the week of the Pay Meeting, but may be held weekly if necessary. The Contractor Project Manager and other System personnel as requested by the Engineer shall attend System status meetings, when requested by the Engineer.

3.7.5 MONTHLY PAY MEETING

Beginning on February 18, 2016, pay meetings shall be scheduled monthly by the Engineer, on the 3rd Thursday of the month at the IDOT District 1 Field Office currently residing at the Traffic System Center in Oak Park. There may be situations which require the meeting to be postponed for a few days, or the meeting location changed to the IDOT Schaumburg headquarters. The Contractor shall coordinate and accommodate Departments requests. These situations include conflict with a state holidays, inclement weather and emergency related issues. 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.

3.8 CONTRACT PERSONNEL

3.8.1 GENERAL RESPONSIBILITIES

The Contractor shall at all times follow Article 108.06 Labor, Methods, and Equipment, as stated in the Standard Specifications of Road and Bridge Construction. The Contractor shall provide 24/7 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 the Engineer detailed resumes listing all certifications and training, and photo card identification for each individual working on the Electrical Maintenance Contract at the Pre-Construction Meeting.

The Contractor shall maintain a current official EMC personnel list (including sub-contracting personnel) on a spreadsheet, alphabetical by last name, with union designation, EMC job title, applicable call numbers and/or cell numbers, fleet management vehicle assignment/fob id number, email address, and office desk numbers if applicable. The personnel list shall be initially furnished to the Engineer at the Pre-Construction meeting. An updated list shall be provided immediately by email to the Engineer at any time there is a change in personnel for anyone working on IDOT equipment in the field.

The Contractor shall transmit the official EMC personnel list each month in the routine work submittal. Changes in personnel from the prior month shall be highlighted. Any new personnel from the prior month shall have a resume submitted with a copy of the Contractor's identification card with photo.

3.8.2 CERTIFIED PAYROLL REPORTING SUBMITTALS

The Contractor shall submit weekly certified payroll reports for all employees working on the Contract, including subcontractor's personnel. The printed time records of labor worked on IDOT Electrical Maintenance Contract shall be submitted to the Illinois Department of Transportation, EEO/Labor Compliance, District 1, Schaumburg and an Excel spreadsheet format copy to the IDOT Engineer. The reports shall list the contract personnel in alphabetical order, by last name first, and shall show hours worked by straight time and overtime.

The following weekly reports shall be submitted:

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

When 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 also transmit to the Engineer, in the monthly routine work submittal, a Systems Work report, an Excel spreadsheet listing work performed monthly by:

- Name of employee performing work, in alphabetical order by employee last name
- Weekly hours worked by the employee, by categories of EMC work, non-EMC work, and total hours
- For EMC work list hours worked per system and by category (routine and non-routine)
- For Subcontractor work a separate spreadsheet, identifying same as above

The Department will provide the spreadsheet format at the pre-construction meeting.

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
- IT Network layer 2 and 3
- 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

The Contractor shall produce an organization chart to document the chain of command and demonstrate compliance with the work requirements defined by the contract, including reporting relationships of all personnel. The chart shall provide the name of individuals assigned to all positions with roles and responsibilities named. 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 work responsibilities.

3.8.5 ORGANIZATION FOR WORK PERFORMANCE

The Contractor shall at all times follow Article 108.06 Labor, Methods, and Equipment, as stated in the Standard Specifications of Road and Bridge Construction. For this Contract the Contractor is allowed to structure his workforce to best fulfill the requirements herein; however the workforce must have the education, skills, and experience to accomplish quality work, at timely rates of progress.

3.8.6 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 personnel working on this Contract. The individual appointed to this position shall be approved by the Engineer prior to the start of the contract.

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 or Project Manager is necessary. The Principal or Project Manager may appoint an individual who 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.

3.8.7 OFFICE MANAGEMENT (normally not in field)

All Systems

Work requirements and knowledge acquired as such that individuals have:

- 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
- Authority to make assignments for daily work agenda
- Daily review of work Tickets
- Daily review and timely distribution of all maintenance repair and modification work documentation including daily agenda, tickets, and miscellaneous reports
- Oversee maintenance transfers and new installation inspections
- Submit lane closure requests and implement approved traffic control plans
- Coordinate emergency operations
- Prioritize the emergency response
- Supervise all routine and non-routine work
- Ability to manage staff of twenty (20) or more
- Ability to communicate effectively
- Proficient in the use of PC and MS Office Suite.
- Possess knowledge of electrical codes such as NEC 2014 and work related safety practices (OSHA)
- Valid Electrician's card
- Ability to meet the 24/7, one (1) hour in-district response requirements

Traffic Signal System Expertise

Work requirements and knowledge acquired as such that individuals have:

- A BS or BA degree from an U.S. Department of Education accredited technical institute, engineering college or business college.
- Advance training in NEC and MUTCD guidelines and methods in the last 3 years.
- Attendance in advance IMSA seminars in the last 3 years.
- Have IMSA level III certification by July 1, 2016
- Trained in the operation of Aries, Tactics, Centracs, and TransSuite traffic signal management software.
- Trained in the operation and programming of Econolite and Eagle/Siemens controllers, including those interconnected to railroad warning devices.
- Trained in the operation and management of District 1 closed loop traffic signal systems.
- Trained in the District 1's Traffic Control and Protection measures and procedures.
- Managed a government maintenance contract in the last 5 years with a technical staff of twenty five (25) or more.
- Have a 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 experience in solving trouble calls for any traffic signal cabinet or communications failure
- Other:
- Maintain a current driver's license.

- Maintain equipment and Work Zone safety certification.
- Be able to communicate effectively.

Surveillance System Expertise

Work performance requirements dictate that individual(s) have:

- Knowledge equivalent to electrical engineering or technical school certification
- Proficiency in technological networks
- Ability to troubleshoot Allen Bradley programmable logic controllers, PLC 5, and RS Logics 5000 controllers
- Knowledge of RSView 32 Project Development, Control Logix 5000 and Liq. V programming
- Knowledge of advanced computer skills
- Suitable work experience in electrical construction and maintenance with a minimum of eight (8) years experience.
- Ability to operate and calibrate a variety of electrical test equipment
- Ability to troubleshoot technological equipment
- Ability to troubleshoot CCTV systems and fiber optic transceivers
- Familiarity with fiber optic and LED DMS
- Ability to oversee the maintenance and operation of REVLAC ystem, VDS, CCTV, RACS
- Ability to oversee the maintenance and operation of Ramp metering, Detector cabinets, ATMS and DMS.
- Familiarity with ladder logic GUI programming and/or traffic signal programming
- Familiarity with telephone data line troubleshooting
- Familiarity with dynamic data exchange communications
- Familiarity with open database architecture
- Familiarity with basic electronics and electronic components
- Familiarity with large scale FSK tone telemetry systems
- Familiarity with various types of telecommunication systems
- Familiarity with SM fiber optic installations, cisco layer 2 and 3 networking protocols.
- Familiarity with OSHA Safety Standards
- Familiarity with IDOT Traffic Control Standards

Lighting System Expertise

Work performance requirements dictate that individual(s) have:

- Minimum of ten (10) years experience in construction, maintenance, and operation of all Lighting system and extra systems. 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
- Experience in the operation of IDOT electrical control circuits
- Ability to interpret contract drawing and wiring diagrams

- Familiarity with diesel engine power generators and related transfer switches for back-up power
- Familiarity with fiber optic cable, signs and CCTV
- Extensive experience in supervising multiple crews skilled and unskilled to oversee troubleshooting and repair of electrical equipment and systems,
- Familiarity with electrical system, weigh stations, maintenance yards, rest areas, moveable bridges, high mast light towers, light poles, Sign lighting, underpass lighting, navigation signals, lighting cabinets and its controls, 120/240 volt and 240/480 volt service and equipment, breakaways, fuses, bonding and grounding.
- Familiarity with cable underground work
- Familiarity with OSHA Safety Standards
- Familiarity with IDOT Traffic Control Standards
- Familiar with all wiring, conduits, luminaires, lamps, LED, above ground wiring, splices, underground cable splices, Handholes there operation and different methods of installation.
- Ability to manage and coordinate lighting outages, knockdowns and cable trouble.
- Responsible for planning electrical projects, including material procurement, allocation of manpower and scheduling of work to maintain a minimum of 20,000 poles, 1650 Towers, 600 lighting cabinets, 29 maintenance yards, 6 moveable bridges,and other various locations and equipment.
- General knowledge of computers and their operation, including MS Office suite software.

Pump Station System Expertise

Work performance requirements dictate that individuals have:

- Technical Institute certificate or Electrical Engineering diploma
- Extensive construction experience in mechanical and electrical of pump station or commercial and industrial work with a minimum of eight (8) years' experience
- Basic fundamental skills, knowledge and understanding of power distribution 4160 volt.
- Electrical and mechanical maintenance experience, working on all types of storm water pumping station equipment a minimum of 48 pump station with pumps that are rated at 4160/480/240 volt and capacity that range from 300 GPM to 30,000 GPM
- Knowledge of implementation and preventive maintenance of vertical and submersible pumps
- Experience, training and skills to troubleshoot and repair pumps and other mechanical equipment at pump stations.
- Experience with low voltage motor-control centers for 3-phase (240/480) systems
- Experience with relay logic controls, SCADA systems, PLC program controls and responsible for its design, installation, testing and acceptance.
- Experience in the maintenance and operation of switch-gear and, MCC, circuit protection equipment, motor controls, fire and gas alarm system.
- Experience in acceptance inspection and testing of pumping stations
- Familiarity with engine power generators and related transfer switch equipment
- Familiarity with Hazardous materials operations (refer to Article 3.13.3)

- Familiarity with OSHA Safety Standards
- Familiarity with IDOT Traffic Control Standards

3.8.8 FIELD SUPERVISORS/ TECHNICIANS

Traffic Signal Expertise (Patrolmen)

Work performance requirements dictate that individuals have:

- IMSA Traffic Signal Field Technician level II certificate with a minimum of eight (8) years experience.
- Ability to respond to callout tickets, trouble calls and emergencies 24/7 and shall meet the one (1) hour in-district response requirements
- Ability to maintain the integrity of all traffic signal timing, parameter programming information, traffic responsive and time of day signal systems
- Substantial experience with NEMA traffic signal closed loop systems operating in the traffic responsive mode
- Extensive experience in troubleshooting equipment malfunctions including all closed loop signal system malfunctions
- Ability to troubleshoot low voltage equipment malfunctions
- Ability to maintain fiber flip disk, LED DMS, and DMS MOSYS
- Ability to perform communication equipment repairs
- Knowledge and familiarity with single mode fiber optic cable installations
- Knowledge and familiarity with troubleshooting electronic equipment
- Knowledge and familiarity with OSHA safety requirements
- Knowledge and familiarity with IDOT Traffic Control standards
- Valid electrician's card

3.8.9 WORK CREW(s)

All Work Crews

Work performance requirements for all work crews to perform specified tasks, PM inspections, and motorist caused damage, outages, cable locate, repair and other work specified herein and its installation performance requirements dictate that individuals have:

- Minimum of five (5) years hands-on experience working with 120/240 volt and 240/480V service. Work experience as an electrical trades person with local electrical contractor companies
- Valid electricians card
- Ability to meet the 24/7, one (1) hour in-district response requirements
- Experience interpreting contract drawings and wiring diagrams
- Experience using and reading current and voltage meter, Meggers and other test instruments, extensive experience reading and troubleshooting control ladder logic
- Knowledge and familiarity with OSHA safety requirements and its application.

- Knowledge and familiarity with IDOT Traffic Control standards
- Experience in troubleshooting, special maintenance problems, cable repairs, outage repairs, underground cable repair, cabinet replacement, temporary repairs, inspections, knockdown replacement, and other maintenance work as specified herein.
- Extensive experience in clearing motorist caused damage for safety
- In depth knowledge of Safe work practices, applicable codes, laws and ordinances, circuit diagrams and industrial controls.
- Experience using computers and their operation, maintenance, software programs and application needs.

Lighting System Crew(s)

Work crews as specified herein dictate that individuals have:

- Skills in all typical highway system general work, construction, and repair
- Ability to perform repairs of navigation lighting, interior lighting, power distribution, and other equipment as listed herein
- Experience in troubleshooting, special maintenance problems repair, cable repairs, lighting outage repairs, underground cable repair, lighting cabinet replacement, temporary repairs, tower inspections, HMLT and light pole knockdown replacement, under pass inspections and other maintenance work as specified herein.
- Extensive understanding of Highway lighting maintenance, lamp and luminaire components, electrical services, poles and highmast components, lighting applications, testing, investigation in the roadway lighting field.

Surveillance Crew(s)

Work crews as specified herein dictate that individuals have:

- Traffic Signal Field Technician IMSA level II certification
- Ability to perform repairs of surveillance equipment, cameras, dynamic message signs, ramp metering equipment/cabinets, loops, cable, and other equipment as listed herein
- Experience in splicing, termination and testing of fiber optic cable
- Extensive experience in the repair of REVLAC and RACS Equipment
- Extensive experience in the operation and maintenance of the REVLAC and RACS system
- Extensive experience in the VDS network digital and analog.
- Experience with FSK tone telemetry system
- Experience with telephone data line troubleshooting
- Experience in DMS MOSYS, fiber flip disk and LED DMS maintenance
- Familiarity with dynamic data exchange communications
- Familiarity with basic electronics and electronic components
- Familiarity with large scale FSK tone telemetry systems
- Familiarity with various types of telecommunication systems
- Familiarity with single mode fiber optic cable installations

Pump Station Crew

Work performance requirements dictate that individuals have:

- Minimum of five (5) years hands-on experience working with 240/480V 3 phase motors and pump controls.
- Knowledge and ability to work on (4160 volt) electrical equipment
- Extensive experience with troubleshooting and repair of pumps, motor controls, sensors, piping, fittings, valves, monitoring systems, alarm systems, MCC, switchgear, HVAC and other electrical and mechanical equipment as specified herein.
- Knowledge of pump station maintenance and operation procedures
- Extensive experience in SCADA systems, such as Alan Bradly ControlLogix 5000 and Liq V TESCO, RSView 32 HMI and Workbench.
- Extensive experience with pump removal, installation, breakdown and re-builds, valves, actuators, trash racks and other mechanical equipment as specified herein.
- Familiarity Experience with the removal and installation of submersible/column pumps
- Knowledge and familiarity training in the implementation of with OSHA safety requirements
- Valid electrician's card

Traffic Signal Systems/Railroad expertise

Work performance requirements dictate that individuals have:

- A degree from an U.S. Department of Education accredited technical institute, engineering college or Business College.
- Advance training in NEC and MUTCD guidelines and methods in the last 3 years.
- Attendance in advance IMSA seminars in the last 3 years.
- Have IMSA level III certification.
- Experienced in the operation, testing and trouble-shooting of District 1's traffic signals that are interconnected to railroad warning devices. Has working knowledge of ICC procedures and practices for traffic signals interconnected to railroad warning devices.
- Trained in the operation of Aries, Tactics, Centracs, and TransSuite traffic signal management software.
- Trained in the operation and programming of Econolite and Eagle/Siemens controllers, including those interconnected to railroad warning devices.
- Trained in the operation and management of District 1 closed loop traffic signal systems.
- Trained in the District 1's Traffic Control and Protection measures and procedures.
- Have a minimum of ten (10) years' experience in construction, maintenance, and operation of traffic signals and traffic signals systems currently being used in District 1.
- Experienced in solving trouble calls for any traffic signal cabinet or communications failure.

  Other:
- Maintain a current driver's license.

- Maintain an electrician's card.
- Maintain equipment and Work Zone safety certification.
- Be able to communicate effectively.

3.8.10 CONTRACT ADMINISTRATION

Work performance requirements dictate that individuals have:

- Experience with contractor work administration
- Experience with contract purchasing
- Experience with construction billing and collection
- Excellent verbal and written communication skills
- Excellent data entry and proof-reading skills
- Advance level skills with Windows and Excel spreadsheets
- Ability to calculate percentages and perform mathematical calculations
- Organization skills for contract work documentation
- Ability to work in stressful situations with time deadlines

3.8.11 CONTRACT DISPATCHERS

Work performance requirements dictate that individuals have:

- Substantial dispatching experience
- Experience with alarm monitoring
- Advance level skills with Windows
- Familiarity with construction terms, preferable to be electrical based
- Excellent written communication skills; good spelling
- Clear and distinct voice for telephone communications
- Excellent data entry skills
- Ability to work in stressful situations, (in facility taking up to 10,000 calls per year)
- Ability to respond to the facility within one (1) hour during storm situations

3.9 SAFETY PROGRAMS AND REQUIREMENTS

3.9.1 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. The training specified below shall be performed each year and shall be offered up to 12 IDOT engineers and technicians to attend the training. The training shall be covered under routine maintenance monthly payment.

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.

3.9.2 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.

3.9.3 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.

3.9.4 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 on NFPA 70E in 2016, and in 2017 grounding and lightning protection of electrical systems and NFPA 72 or equivalent in 2018. 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.

3.9.5 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. The Engineer shall work with the Contractor to identify this specific equipment training necessary.

3.9.6 TRAFFIC SIGNAL SYSTEM

The Contractor shall provide training within the first quarter of the year. A scheduled date and time shall be provided at the pre-construction meeting. The training shall be on traffic signal controller operations, from the controller manufacturers, for all patrolmen, traffic signal/surveillance specialists, and twelve 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
- Video Detection – Iteris, Autoscope, FLIR
- Conflict Monitors – EDI
- MMU – EDI, Reno, Econolite
- BIU – Eagle, Econolite
- Traffic Signal troubleshooting

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

3.9.7 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 specialists and applicable patrolmen. The training shall be performed within the first quarter of the year. A scheduled date and time shall be provided at the pre-construction meeting.

3.9.8 PUMP STATION SYSTEM

The Contractor SCADA specialists, patrolmen, PS specialists and work crew, repair crew personnel 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 IDOT PS Engineer. The Contractor shall provide a schedule at the pre-construction meeting. 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, communication and pump station network. 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 of every contract year.

3.10 PERSONNEL TRAINING

The five day training session shall be for up to twelve Department personnel and shall incorporate practical applications and calculations. The training provider shall be certified and specialized in the field. The Contractor shall submit for approval to the Engineer a list of instructors with their certifications and experience for approval. Contractor shall also provide an outline for each course being provided to the Department for approval 30 days before training begins. All training shall be provided at the Traffic Systems Center or as directed by the Engineer. The training shall be hands on.

2016 – NFPA 70 NEC an in depth training in the 2014 National Electrical code with practical applications and calculations, the training shall be a five day training to cover Code changes, electrical installations, branch circuits and feeders, services, conductors and overcurrent protections, grounding and bonding, raceways, wiring materials, transformers, motors, generators and special locations.

2017 – Cisco Routers and switches including brief review of network fundamentals. OSI model, TCP/IP network addressing and routing IP subnetting , Cisco IOS, VPN solutions, Configuration of Cisco Catalyst Switches and Cisco Routers, managing device configurations files, route tables, routing methods, Spanning Tree Protocol (STP), Concepts of VLANs and trunking, Routing between VLANs, Implementing VLSM, Configure, verify, and troubleshoot OSPF and EIGRP, Network discovery and management using Cisco Discovery Protocol (CDP), Link Layer Discovery Protocol (LLDP), Telnet, secure shell (SSH), and Trivial FTP

2018 – TBD. Course shall be comparable to courses covered in 2016 and 2017

3.11 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 a 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, minus any payments of non-routine pay items or contract spare parts/material used, 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.

3.11.1 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 MUTCO for the work zone conditions and railroad-highway grade crossing.

3.11.2 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.

3.11.3 KEEPING THE EXPRESSWAY OPEN TO TRAFFIC

Whenever work is in progress on or adjacent to an expressway, 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, the State Standards and the District Freeway details. All Contractors' 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 Contactor 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 at www.idotlcs.com twenty-four (24) hours in advance of all daily lane, ramp and shoulder closures and 7 days in advance of all permanent and weekend closures on all Freeways and/or Expressways in District One. This advance notification is calculated based on workweek of Monday through Friday and shall not include weekends or Holidays.

Shoulder closures or partial ramp closures will not be permitted on weekdays (Monday thru Friday) from 5:00 a.m. to 9:00 a.m. and from 3:00 p.m. to 7:00 p.m.

The approval for emergency closures or emergency moving operations shall be requested from 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. Also, the contractor shall promptly remove their lane closures when Maintenance forces are out for snow and ice removal.

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.

Lane closure hours will be determined by the Expressway Traffic Operations Engineer, and will be made a part of the Traffic Control Plan. The Contractor shall perform work specified herein within the Allowable Expressway Lane Closures Hours.

3.11.4 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.

Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified under the Special Provisions for "Keeping the

Expressway Open to Traffic", the Contractor shall be liable to the Department for the amount of:

One lane or ramp blocked = $2,000.00/15 min

Two lanes blocked = $5,000.00/15 min

Not as a penalty but as liquidated and ascertained damages for each and every 15 minute interval or a portion thereof that a lane is blocked outside the allowable time limitations. Such damages may be deducted by the Department from any monies due the Contractor. These damages shall apply during the contract time and during any extensions of the contract time.

3.12 VEHICLES

3.12.1 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.

Each Contractor vehicle shall carry a copy of the Contract or applicable sections herein, and all vehicles shall carry Article 4.9.5 Motorist Caused Highway Damage and Article 4.17.4 Tickets.

Fleet Management System

All vehicles used on Contract work shall be equipped with an in-vehicle GPS device that sends information via wireless or satellite communication to a remote data center over a secure network. The Contractor shall provide each driver/employee working on the EMC (including sub-contractors) an identification code and a key fob. Review Fleet Management service requirements in Article 9.0.

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.

3.12.2 EQUIPMENT FOR EACH VEHICLE PERFORMING TRAFFIC SIGNAL WORK

- Digital camera or camera phone with a minimum 10 MP and flash capablities
- Lap-Top PC that shall include: Carrying case, power cords to run in vehicle, and capable of operating all applications/software as required for the Traffic Signal systems
- EDI Malfunction Management Unit (MMU 16E or better)
- EDI Conflict Monitor
- Quantity of 3 - TS2 Bus Interface Unit
- Cell-Phone Interface for PC (Systems Trucks)
- 3-Point Ground Tester
- Amp-Volt Meter
- Loop Analyzer Model ILA-550
- Conduit-Cable Locator
- Light Source for Fiber Cable
- Audible tester for Fiber Cable (System trucks)
- Emergency Pre-emption Emitter
- Fish Tape – 100 ft.
- 10 foot ladder
- Measuring Wheel
- ASC/2 Controller
- ASC/3 Controller
- EPAC TS2 M40 Series Controller
- EPAC TS1 M40 Series Controller
- Eagle M50 Series Controller
- Load Switch
- Electric Drill – ½ chuck
- Shovel
- Quantity of 8 Stop Signs
- Quantity of 8 Traffic Cones
- Quantity of 2 Lane Closure Signing
- Strobe warning lights, spot lights, and directional bar that meets or exceeds current standards.

Equipment for Supervisory TS and specialists Vehicle: (in addition to the above)

- Portable PROM Programmer Dataman 54 or equivalent

- O.T.D.R., Siecor Model 340 or equal with necessary modules capable of testing both single-mode and multi-mode fiber cable
- CD Writer which transcribes 3 ½ disk onto blank CD
- Lap-top fully functioning capable of operating all applications software required for the traffic signal system.

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

3.12.3 EQUIPMENT FOR EACH VEHICLE PERFORMING SURVEILLANCE WORK

- AC generators capable of 40 amp output to power DMS sign
- Digital Camera with min.10 MP and flash capabilities
- Quantity of 8 Traffic Cones
- Quantity of 2 Lane Closure Signing
- Loop Analyzer Model ILA-550 or equal
- Lineman's test set, Harris Dracon TS-21x89 or equal
- Digital multimeter, true RMS multimeter, with case & test leads Fluke model 87V or equal
- Digital AC clamp on meter with case equal to or Exceeding Fluke Model 332 with test leads or latest

- Greenlee Gt-104 Comprehensive Signaling TIMS 2 &4 wire Freq/level noise measure. Li-Ion Battery, AC/DC adaptor charger, Cable kit Bantam-Bantam and Bantam- Alligator, soft carry case, rugged bumpers
- Pipe and cable locator equal to or exceeding Pipehorn 800 series pipe and cable locator
- Clamp on ground resistance meter equal to or exceeding Fluke 1630 Earth Ground
- Major megger equal to or exceeding Megger 212159 MJ159 Major Megger Hand Cranked Insulation Resistance Meter
- Tone and Probe Kit equal to or exceeding Greenlee standard (701K-G)
- AC/DC digital clamp current meter equal to or exceeding TECPEL model DCM-039
- Fiber optic power meter equal to or exceeding Fluke Simplifiber Pro Power meter model SFSINGLEMODESOURCE 1310/1550 with fixed SC port with ST and LC testing capabilities utilizing the hybrid test reference cord accessories
- Fiber optic cleaning kit with solvent dispenser, Solvent dispenser pen, wipes, and LC/ST/SC port cleaning swabs.
- Network Cable Tester equal to or exceeding Fluke Microscanner2 with BNC and Ethernet Adaptors
- Lap-Top PC, equal to or exceed Panasonic Tough Book 31 with the following options minimum, Intel Core i5-5300u 2.3 GHz, Duo Drive MIL-STD-461F IP65 ANSI 12.12.01-2000 Energy Star compliant, RAM 4GB, 13.1 XGA Touch Screen LCD. Backlit Emassive keyboard, Windows 8.1 Pro 64 Bit with Windows 7 down grade option, Battery life 18 hrs min, 500 GB shock mounted HDD, Ports;4-USB, SDXC, Ethernet, HDMI, Serial, PC card, and DOC connector. Latest–Licensed copy of Microsoft Office installed, Licensed copy of Norton 360 version Latest version installed, Internal Mouse, 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.

3.12.4 EQUIPMENT FOR EACH VEHICLE PERFORMING SCADA WORK

- Lap-Top PC, Quad Core Processor or better, minimum 2.66GHz, LED Display, 4GB DDR, 1 TB Hard Drive DVD/CD Burner, Internal Wireless Card, Licensed copy of current Windows OS and Microsoft Office Suite including Access, Internal Mouse, 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) Air Pressure Calibrator Meri-Cal EE33 with kit or equivalent

3.12.5 EQUIPMENT FOR EACH VEHICLE PERFORMING PUMP STATION TROUBLESHOOTING

- Lap-Top PC, Quad Core Processor or better, minimum 2.66GHz, LED Display, 4GB DDR, 1 TB Hard Drive DVD/CD Burner, Internal Wireless Card, Licensed copy of current Windows OS and Microsoft Office Suite including Access, Internal Mouse, Modem Network card (built in), Carry Bag, Modem configuration software, Tesco Workbench Firmware, and power cords to run in vehicle
- Phase Rotation Indicator
- RPM Strobe
- Megger
- Multimeter

3.13 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’ For Traffic Signal work
- Truck, Aerial bucket 40’ for DMS Surveillance work
- Truck, Aerial Bucket 55’ for CCTV and Lighting work
- Truck, Aerial Bucket 70’ for Lighting work
- 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

3.14 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 1, 2016.

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.

- Multimeters with Current Probe, and Thermal Probe.
- Hotspot Locator, Equal to Gen-Eye hotspot pipe locator GL185 with 5-Watt transmitter
- Linesmans Test Set, Equal to Harris Dracon Model TS-21x89
- OTDR Fiber Optic Tester w/launch kit, equal to EXFO model FTB200
- Microwave frequency county for 6 Ghz and 11 Ghz frequencies, HP/Agilent model 5350B
- Digital Multimeters, equal to Fluke latest model
- (3) Breakout Box with case, Equal to Black Box Model SAM232-6s
- (2) Pipe and Cable Locator, Equal to Pipehorn 800 series pipe and cable locator
- Digital Tachometer, Latest Model
- Survey Rods – Level, Round Fiberglass, 25’ – 5 Section, D Electric Certified
- (11) 4 Channel Gas Detectors
- (2) Triaxial Gauss Meter, equal to Bell Technologies, Model 4080 or better

- Coaxial Cable Tester, equal to TWA Communication Model #62-204
- Infrared thermometer, equal to Fluke 62 series or equivalent
- (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: ± (0.2% + 2)

  Power Source: Line Voltage/Battery

  Accessories: Ground Test Kit

  Make: AEMC Digital Ground Resistance Tester or approved equal

- (2) Digital Multimeters, which meet the following requirements:

  Voltage AC: Maximum Voltage: 1,000 V

  Basic Accuracy: ± (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: ± (1.5% + 3)

  Resistance: 600 Ohms – 50 M Ohms

  Power Source: Rechargeable Battery

  Make: Fluke 80 Series DMM or approved equal

- (2) Fall-Off-Potential Ground Resistance Tester, which meets the following requirements:

  Ranges: 2Ω to 20kΩ

  Resolutions: 0.5×10^{-3} x range

  Accuracy: ± (2% + 1) from 10% to 100% of range

- (4) Insulation Resistance Test Equipment, which meets the following requirements:

  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	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

- (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	
Useable		
Frequency:	DC – 10 KHz	
Output Levels:	1 mV/A	
Power Source:	Rechargeable Battery	
Make:	Fluke 80-i1010 or approved equal	

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

(3) Clamp-On Ground Resistance Meters, which meet the following requirements:

Range	0.1Ω to 1.00Ω	1.0Ω to 50Ω	50Ω to 100Ω	100Ω to 200Ω	200Ω to 400Ω	400Ω to 600Ω	600Ω to 1200Ω
Resolut.	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)
Make:	AEMC 3700 Clamp-ON Ground Resistance Meter or approved latest equal model

ARTICLE 4.0 – ROUTINE MAINTENANCE REQUIREMENTS

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 shall be included in the routine maintenance bid.

On January 1st, 2016 a list of all maintained locations shall be provided to the Contractor via the EMCMS. The Contractors EMCMS and EMCIT workstations are to be operational January 1, 2016 at 12:01 AM. A printed copy of maintenance locations can also be provided to the Contractor after award, prior to the maintenance transfer.

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 of routine maintenance are included in, but not limited to, this article. Maintenance of Department owned equipment, devices, systems and appurtenances at maintained locations shall be covered under routine maintenance unless specifically stated herein.

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 Contractor shall perform and

install equipment in accordance with the best practice of the trade and equipment installed shall be in accordance with manufacturer's recommendations.

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.

Equipment for operational needs installed during the contract year at a maintained location shall become part of the maintained location and covered under routine maintenance.

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 shall abide by the requirements of Article 4.9.1

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 disposition 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, appoint managerial level personnel 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 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

State of Illinois Disaster Declarations

The Governor may declare a State Disaster due to natural disaster or catastrophic failure. The Contractor shall provide the equipment and personal to promptly respond to equipment trouble calls due to severe storms causing extensive damage from flooding of roadways, massive snow accumulation, or extensive tornado damage, any of which is detrimental to the safety and traffic flow of the motoring public. The Contractor shall adhere to the rules and guidelines set forth by IEMA and FEMA for reimbursement. The Contractor shall provide accurate documentation of work performed through Tickets and clear pictures of damaged equipment caused by the disaster. The documentation shall include all information required under the guidelines.

The Federal Highway Administration (FHWA) through their Emergency Transportation Operations aid the State DOT's when a non-recurring event either interrupts or overwhelms transportation operations. This funding allows the State to collect for repairs and allows the Department to pay the Contractor for emergency repair work, which is normally routine work covered through the EMC. The Contractor shall be able to collect labor, equipment, and repair material costs for eligible repair work during the declared disaster time period (usually no more than 48 hours) if proper documentation is provided to the Department.

The intent of the federal program is to provide aid for repairs to damaged equipment caused by a natural disaster or catastrophic failure, not repairs to equipment damaged as a result of preexisting and non-disaster related, i.e., inherent deficient conditions. In addition, the funding shall not relieve the Contractor of its maintenance responsibility simply because a storm of unusual character and extent causes serious damage.

The EMC Damage Repair Submittal form and FHWA summary submittal; the DDIR (Detailed Damage Inspection Report) must be completed within ten (10) working days of the end date of the declaration and submitted to the Engineer for approval before re-imbursement is made to the Contractor. Both forms shall be provided to the Contractor at the pre-construction meeting.

Contractor Procedures for Potential Disaster Situations

The Contractor shall follow procedures as established herein Article 4.3 Contractor Emergency Response and Article 4.4 Contractor Call-Out Policy. However, when weather situations dictate that there is the potential for a disaster situation, the Contractor's appointed Emergency Coordinator shall be in constant contact with the Engineer as to the state of operations. The Engineer shall be provided a disaster plan with additional staffing for electrical system work and dispatch services.

Eligible Items of Repair Work for Additional Compensation

1. All repair work must be categorized as 1) emergency repairs and 2) permanent repairs and be a minimum of $ 5,000.00 per site:

   Emergency Repairs are those repairs during and immediately following a disaster to restore essential traffic, to minimize the extent of damage, or to protect the remaining facilities. (Examples would be repair of damaged equipment from disaster weather events, not motorist caused damage, nor the removal of snow or ice on operating equipment.)

   Permanent Repairs are those repairs undertaken (after emergency repairs are complete) to restore the highway to its pre-disaster condition (but completed within the declared disaster timeframe).

2. Repair or replacement of traffic control devices including traffic signal system, directional and informational signs, and railroad-highway crossing warning devices, if the damage and associated repair or replacement costs can be shown to exceed heavy maintenance*.

"*Heavy Maintenance" is defined by the FHWA as work to repair damage normally expected from seasonal and occasionally to unusual natural conditions or occurrences. It includes work at a site required as a direct result of a disaster that can reasonably be accommodated by a State or local road authority's maintenance, emergency, or contingency programs.

3. Work must be in the right-of-way limits of a Federal or State highway, unless local roads are included in the declaration by the Governor.

4. Only restoration work in kind is allowed, no new construction, correction of deficiencies, or improvements are acceptable.

5. Materials of an expendable nature are allowed, however, a supplier's invoice must be supplied and no tax or mark-up is allowed. A Contractor employee having knowledge that the supplies or materials have actually been incorporated into the repairs shall sign the supplier's invoice.

6. Labor and Equipment rates are acceptable as allowed herein the EMC.

7. Debris removal

8. Work necessary to minimize the extent of damage and/or to protect facilities from damage

Ineligible Items of Repair Work

1. Heavy Maintenance (see point 2 above)

2. Damage Estimate under $ 5,000 per site

Generally, a site is an individual location where damage has occurred. However, a site could include several adjoining locations where similar damage, related to the same cause, has occurred. As an example flooding water that runs along or crosses under a highway has caused damage at several locations within a reasonable distance of each other, so it would be acceptable to package these together as a single site. Another exception would be damage to traffic signs which has occurred at several locations on an area wide basis. Here it would be acceptable to group these locations on an area wide basis by route or jurisdiction, with the accumulated amount considered a site. But grouping damages to form a site based solely on subdivision, i.e., county or city boundaries will not be accepted.

3. Snow or Ice Removal

Snow and/or ice removal is viewed as a relatively short term event not causing physical damage to a highway.

4. High wind damage, except in cases of declared storm disasters such as tornados.

4.5.1 UNAUTHORIZED ACCESS OR TAMPERING OF IDOT PROPERTY

If Contractor personnel see an unauthorized individual at a site they shall notify 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 Engineer. 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 relay all information to the EMC Dispatch Center so a Ticket may be created. The EMC Dispatch Center shall obtain a copy of the official police report. Copies of the patrolman's photos and the 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 or 3rd party calls requesting a locate of state owned electrical systems, cables or components at all locations and/or facilities. The Contractor shall enter all required data for cable locates in the proper fields in EMCMS/EMCIT screens and shall have all fields completed accurately and timely. The table below provides historical data of cable locate requests that have been performed.

A2015 as of June 28	1630
2014	3465
2013	2814
2012	3683
2011	3673
2010	3148

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.

There are three (3) conduit duct banks located along I-355 and I-290 from Army Trail Road to I-90 and include one (1) empty conduit, one (1) conduit containing

DEPARTMENT fibers, and one (1) conduit containing DEPARTMENT copper cable. The ILLINOIS TOLLWAY fibers will be installed into empty conduit between Army Trail Road and I-90.

The Department's fiber and copper duct package has been relocated from the median to the easterly side of I-290 ROW, and all fiber optic cable locates in the area will be performed jointly by the Contractor and the Illinois Tollway fiber maintenance teams. Future permits for work in the Department ROW shall require the permit holder to coordinate the fiber optic utility locates with both the Department and the Illinois Tollway. The Illinois Tollway's Fiber Optic Maintenance and Management Vendor will participate in J.U.L.I.E. for locates on the Department's right of way. Refer also to Article 9.10.4.

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 IDOT 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 4.17.7
- 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 scrap transfer Disposition Log is signed by the IDOT Inspector. (Refer to state scrap provisions as stated herein.)

All graffiti, including advertising decals, found on system equipment and or structures and buildings shall be removed within one (1) working day. Painting over the graffiti is not allowed.

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.

Maintenance of Department owned equipment, devices, systems and appurtenances at maintained locations shall be covered under routine maintenance unless specifically stated herein.

Many items of general maintenance work require documentation as noted herein. The Engineer retains the right to specify the format, layout and exact details of any documentation requirements and to have deficient reports corrected for re-submittal.

Preventive Maintenance programs (projects) shall be assigned issues and tasks to crew(s) and various people to ensure tasks are completed on time, create projects summary screen, view all project down to details. This work shall be assigned a Routine work ticket(issue) RW.

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 action, 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 EMCIT 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. When an item cannot be replaced in kind, the Contractor shall provide components equal or better than the failed devices or equipment for repairs or replacement work. The Engineer shall approve all Catalog cuts and replacement material which is different from the original installation.

Materials, repair methods and/or equipment replacements shall be suitable for the intended use per Specifications and Standards, and as listed in 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 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 transmitted monthly in the routine work submittal.

Following the completion of the preventive maintenance work all spreadsheets or forms shall be e-mailed to the Engineer per specifications herein. Follow-up work shall be noted with the applicable Ticket number.

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. The Department reserves the right to furnish any or all of the materials or parts for any non-routine work. Materials or parts furnished by the Department may be from the Department's contract spare parts inventory or from other sources available to the Department.

The Contractor shall transmit to the Engineer the list of applicable pay items and quantities to be used so an authorization letter can be issued. Repairs shall be completed within seven (7) days, or as specified in system articles herein.

4.9.3 DAMAGE CAUSED BY CONSTRUCTION (3RD PARTY DAMAGE)

The Contractor shall abide by the requirements of Article 4.9.1 specified herein for repairs to system equipment at locations maintained under routine maintenance, which has been damaged by a 3rd party. 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. Temporary repairs to make the equipment operational and safe for motoring public shall be immediately completed as specified in system articles herein.

The Contractor is allowed to invoice the offending third party for clearing the site for safety and providing immediate corrective action and temporary repairs to system equipment. The Contractor may complete the permanent repairs if the offending 3rd party agrees in writing or the offending 3rd party does not respond to certified letters sent by the Contractor (see below procedures). It is the Contractors responsibility to locate the offending party.

The Contractor shall assign the duties of corresponding with 3rd Parties to one individual and this individual shall be the sole point of contact for all 3rd Party billing documentation.

3rd Party Damage Repair Documentation

Upon finding 3rd party damage to state property (not caused by Department personnel), the first Contractor patrolman responding to the scene shall obtain the following information for the Ticket:

- A date stamped, digital photo of the damage

- The name of the contractor at the scene, address, contract, or permit number and contact name and phone numbers

The Contractor assigned individual shall immediately initiate communications, by certified mail to the offending 3rd party/contractor (and email copies to the IDOT Engineer, Construction Resident Engineer or Permit Engineer). Attached shall be copies of photos showing the extent of the damage to state property, a full explanation of the damage, and an estimate of temporary repairs which will be completed by the Contractor. The letter will also state that an estimate of the cost of permanent repairs will follow, but that it will be the offending parties' choice as to whether the EMC or a contractor selected by the offending party will complete the permanent repairs, to the standards of the State of Illinois, and within the next thirty (30) days. The Contractor shall ask for a written response from the offending party within ten (10) days as to the choice of contractor for the permanent repairs.

Upon completion of the temporary repairs, and ten (10) days after the date of the 3rd party damage, the Contractor shall send a 2nd letter by certified mail to the offending 3rd party with the invoice for the temporary repairs and the cost estimate for the permanent repairs (with email copies to the Construction Resident Engineer or Permit Engineer). The Contractor shall state that if the permanent repairs are not completed within thirty days from the date of the 2nd letter that the Contractor (EMC) will complete the permanent repairs and the offending party shall be billed.

If there is a timely response from the offending party the Contractor shall email the response to the Construction Resident Engineer or Permit Engineer. The Contractor shall work with offending party as to the resolution of the permanent repairs. It is the Contractor's responsibility to assure that the 3rd party contractor adheres by the Electrical Maintenance Contract requirements specified herein. The Contractor shall inspect the equipment and its operation prior to final acceptance.

If thirty days have passed and there is no response from the offending party the Contractor shall email the Engineer the complete packet of information regarding the 3rd party damage and Contractor work to date, including the date of the scheduled permanent repairs and their estimated cost. The Engineer will confirm if the Contractor should complete the permanent repairs. The Contractor shall not send the 3rd party an invoice for permanent repairs to IDOT without the Engineer's approval.

After receiving Engineer approval and the Contractor has completed the permanent repairs the 3rd certified letter shall be sent to the offending party with the invoice and entire amount due the Contractor (with email copies to the Construction Resident Engineer or Permit Engineer). All invoices shall provide a brief description of the cause of the damage and the repairs made, identifying the location by the EMCMS/EMCIT location number, route, county, city or village, and any applicable Ticket numbers.

Unpaid Work by 3rd Party

If the Contractor has identified the offending party and sent three (3) certified mail letters to the offending 3rd party and the offending 3rd party either does not admit to the damage or is not willing to pay for the repairs, The Contractor shall provide proof of the correspondence and documentation as sent to the 3rd party offender as specified in this article and submit to the Engineer. The Engineer shall review the submittal for Contractor compliance and if all requirements have been followed as stated herein, the Contractor shall receive payment for temporary and permanent repair work necessary through non-routine maintenance pay items where unit price items are applicable.

3rd Party Damage Repair Summary Report

The Contractor shall transmit monthly, in the routine work submittal, an Excel spreadsheet which provides all details regarding 3rd Party work and billing. The form will be provided at the Pre-construction meeting. The fields include; date of damage, offending party name, notification date of 1st, 2nd and 3rd certified mail letters, temporary repair date, cost of temporary repairs, date of reply received, name of contractor for permanent repairs, permanent repair date, permanent repair costs, and date of payment to the Contractor.

4.9.4 WORK REQUEST MADE BY 3RD PARTY

The Contractor shall create an EMCIT BR (billing 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.

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. The Contractor may not use Department owned, contract spare parts for motorist caused damage repairs for the Traffic Signal or Lighting Systems, however, refer to Article 9.0 for particular items furnished by the Department for Surveillance System damage repairs. The Contractor is not allowed to collect repair costs from licensed motorists or insurance companies.

Expressway Sand Barrels

When the Contractor finds motorist caused damage to expressway ramp gate sand barrels the Contractor shall create a Ticket, and the IDOT ComCenter shall be immediately notified. The ComCenter will in turn notify the IDOT District One Bureau of Maintenance personnel who will replace the barrels and sand.

MCHD Ticket Documentation

Upon notification of motorist caused highway damage (MCHD) to state property, the Contractor creates a Ticket and immediately dispatches a Patrolman. In some cases the property damage is FOP, (found on Patrol). A Ticket is created for both situations and the Ticket type shall be "MC" for Motorist Caused Damage.

The Contractor Dispatcher shall ask the initial caller for all information applicable for the Ticket. Especially important is the recording of the name of the citizen, Patrolman call #, or agency calling in the report, their telephone number, the police accident report number, the location reported and the pole, quad, or unit number damaged. If the accident report number is not available at the time of the initial notification, the Dispatcher shall follow-up later, obtain the accident report number, and enter into the Ticket. If the damage is due to a "hit and run" incident, the Dispatcher shall enter HR in the Police Report # field.

Photo Documentation of Motorist Caused Damage

Upon arrival at the location of the motorist caused property damage the dispatched Patrolman or other Contractor personnel shall take a minimum of 3 digital photos of the overall damage; one for the damage with the street area showing, and two of the damaged equipment but zoomed photos must show the damage. (As an example do not take a photo of only the light pole decal.) Clear, concise photos are required regardless of the hour of day or night, so the camera or camera phone used by the Contractor personnel shall be of good quality; a minimum of 8 megapixel, have excellent flash capability, and have email capability to send jpg photos of approximately 15KB to 30KB each to the Engineer. In addition, the Patrolman shall use a spotlight of 1,000,000 foot candle power during the night hours to illuminate the area for the photos. The Patrolman should check the photos for their clarity before leaving the site of the damage. Photos which do not show the damaged equipment due to an unlighted area shall be considered Unsatisfactory Service. The Engineer will approve the format, specific size, and conveyance of the photos when the Contractor's camera phone is selected.

The Contractor shall assign one person to have the responsibility to coordinate the photo receipt from the Patrolmen or other Contractor personnel to the Contractor files. This individual shall be responsible to assure that the photos are in compliance to contract requirements, compile all MC ticket photos by the month, and label with the correct ticket number. The digital photos shall be retained by the Contractor for a minimum of one year since the process for matching police accident reports to the Tickets can be a lengthy process. When requested by the Engineer, the Contractor may need to re-email photos from past months Tickets due to insurance company requests or other claims.

An Unsatisfactory Service (and liquidated damages assessed after the first warning) will be issued if a photo is not available for a motorist caused damage ticket, when requested by the Engineer. A flash drive with the monthly photos, each file labeled with the ticket number, shall be given to the Engineer with the monthly routine work submittal.

GPS Documentation

The Contractor's repair crew shall use the criteria from Article 4.17.7 for a required GPS reading at the site of each item of motorist caused damage, i.e., light pole, light tower, traffic signal, flasher, DMS sign, REVLAC gate, etc. This GPS information shall be entered in an EMCIT ticket.

MCHD Repair Documentation

The Contractor shall develop his own documentation form, a Field Repair Log, to use for the accounting of materials, equipment, and labor for each item repaired. The Field Repair Log, shall be similar to a force account Daily Billing log in that all material items for the repair shall be listed with quantity used, labor hours by person, and vehicle use per hour per person. This information with the actual material cost (with no material markup) and the pole or unit number/quad with GPS designation as obtained at the time of the repair shall be entered into the Ticket in the EMCIT within 48 hours of the completion of the repair work.

The Blue Book Equipment Rental Rate shall apply for equipment used, as of January 1 of each year, and the current allowed labor rate shall be used. If a sub-contractor or specialty vendor is used for the repairs, their vendor invoice must list labor, materials and equipment charges separately. A lump sum vendor invoice is not acceptable.

The Contractor shall create a statement from the Ticket information for the Department for MCHD repair billing to insurance companies, without markups. The statement/invoice shall reflect the actual cost of the repair; with a separate accounting of costs of materials, equipment, and labor. A lump sum vendor invoice is not acceptable. All statements shall be signed by the Contractor appointed system supervisor/manager to verify repair work completion per Contract specifications.

The Contractor shall have for use a shipping/address label maker which attaches to a PC by a USB cable with AC adapter, equal or better than a Dymo Label 450 series label writer, version 8, with software to print from Microsoft Word. The Department shall furnish the Contractor the Word formatted police department addresses. The Contractor shall use the label maker and its software to print the appropriate police department address label, police accident number label, and Ticket # for each MC Ticket. The Engineer shall approve the label format prior to the first month's submittal.

MCHD Ticket Repair Package Submittal

At the end of each month the Contractor shall print a MCHD Ticket chronology report, a cumulative list of all MC tickets, by system, and shall identify those Tickets which had

repairs completed in the past month. The Contractor shall submit a MCHD Ticket Repair Package for each MC ticket which had repairs completed in the prior month.

Each ticket submittal shall be packaged in an unsealed 9" x 12" manila envelope or file folder which shall be labeled with the Ticket number. The MCHD Ticket Repair Package shall contain:

- Field repair log signed by the supervisor/foreman
- Original MCHD statement/invoice on company letterhead
- (3) additional copies of the statement/invoice
- (3) printed self-stick mailing labels of 1 inch by 3 inch (one with police department address, one with the police accident number as shown on the ticket, one with the Ticket #)
- Hard copies of photos, (all photos taken of the incident with the Ticket number listed)
- Copy of an EMCIT police accident report request for all local and county motorist caused damage incidents (non-state)
- Addressed envelope to local and county police agencies

The MCHD Ticket Repair Package shall be submitted to the Engineer at the monthly Pay Meeting. The format of the MCHD statement/invoice will be provided to the Contractor at the Pre-Construction Meeting. The Contractors statement/invoice number will be the same as the Ticket number.

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. This information shall be provided within one week of the Engineer request.

Claims Processing

Following each Pay Meeting the Engineer shall review the MCHD Ticket Repair Packages and provide the Contractor a list of Tickets for Department Claims processing. The Contractor shall provide the Department a Summary Statement on letter-head, signed by the Project Manager, with the listed Tickets and repair costs, within one week of the Engineer request.

The following month, as an accounting procedure, the dollar amount of the MCHD Summary Statement shall be deducted from the District 1 EMC monthly routine work maintenance payment to the Contractor and shall be forwarded to IDOT Springfield and the Contractor shall be paid that amount from the State of Illinois Motorist Caused Highway Damage Fund.

For the last month of the Contract the MCHD Ticket Repair Packages and Summary Statement shall be processed as soon as possible so to be ready prior to the last Pay Meeting of the Contract.

Once or twice per year upon Engineer request the Contractor shall furnish plain No. 10 envelopes (9 ½" x 4 1/8") self-sealing envelopes, (approximately 500 per year), ten (10) Brother TC-20 labeling tapes, and several boxes of manila file folders, inter-office memo folders, and expandable file folders for files and mailings to insurance companies.

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 motorists or insurance companies. In special situations where repair and/or replacement costs exceed $ 25,000.00, wherever, such incidents of wide-spread damage, and/or costly damage, including hazmat situations, the Department may make a special payment to the Contractor if:

A. The Contractor provides the Engineer documentation that an item of state property has been damaged and the repair and/or replacement costs exceed $ 25,000.00 by submitting:
   - Material purchase documentation (provide vendor invoice)
   - Labor repair costs per day, per job classification (General Billing Logs)
   - Equipment charges per EMC allowances (Article 5.1)
   - List of Contract Spare Parts, if provided for Contractor use
   - Minimum of five (5) photos of the damaged equipment
   - Contractor notarized Invoice with detailed line item costs

and

B. The IDOT Claims Department obtains MCHD repair cost reimbursement.

To arrive at the special payment amount to the Contractor:

1. Start with the total dollar amount of the repair and/or replacement costs collected by the IDOT Claims Department (which may not equal the total dollar amount of the Contractor's repair invoice)

2. Subtract (from point 1):
   - $ 25,000.00 (base)
   - Total dollar amount of any allowed non-routine authorized work, (for damage to light towers refer to Article 7.0 or damage to the fiber optic network refer to Article 6.0) as stated herein and paid by the Department
   - Total dollar amount of any credit for Contract spare parts usage

3. Dollar amount remaining shall be paid to the Contractor

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 as entered in the Fleet Management system. The patrolling of a new location accepted for maintenance shall be instituted immediately.

The Contractor shall submit proposed system patrol routes, for Engineer approval, at the Pre-Construction Meeting. Proposed system patrol routes shall be submitted on an Excel spreadsheet with columns for Vehicle assignment, Patrolman's assigned fleet identification number, Patrolman's name, EMCMS/EMCIT designated location number, Main Street name, Cross Street name, Cabinet or Unit number if applicable, Week, Day, Stop number, and maintenance status (ON, OFF, or Partial). The submittal shall show any Patrol stops which the Contractor performs for any other agency or municipality, if on the same day as an IDOT patrol.

Once approved by the Engineer, all patrol routes and identified patrolmen and vehicles shall be entered in the Fleet Management software program by December 15, 2015 and in the EMCMS/EMCIT by January 1, 2016. The Contractor is responsible for accurate patrol reporting. If there are any changes in patrol routes or assigned patrolmen the Engineer shall be provided an Excel spreadsheet report highlighting the changes at the monthly System meeting. The Excel spreadsheet with the new routes and/or patrolmen shall be transmitted monthly in the routine work submittal. The Fleet management software and EMCMS/EMCIT shall always be kept up to date with vehicle assignment and patrolmen identification.

During the Contract year Patrolmen may be requested to provide additional information regarding the equipment at their patrol route stops. Examples of work would be collection of GPS data, count of combo lighting, determination of equipment manufacturer or model, etc.

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. All incidents of malfunctioning equipment or damaged shall have Tickets created, even if the repair was performed on patrol.

4.10.2 NIGHT OUTAGE PATROL SURVEY

4.10.2 NIGHT OUTAGE PATROL SURVEY

The Contractor shall perform a night-time patrol of the Lighting system; highway lighting, sign illumination, navigational lighting, traffic signal locations with combination traffic signals and overhead lighting, and the Surveillance system dynamic message signs and

tower beacons 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. The Contractor shall follow all procedures for Patrol Routes as specified in Article 4.10.1.

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 Surveillance Cabinet “G10”.

Night outage 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 of the lighting system during the night time patrol. The joint inspection shall be performed a minimum twice per year as directed by the Engineer.

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 call 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 12 noon every workday, 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:

- Highway lighting outages
- Sign lighting outages
- Navigation lighting outages
- Dynamic Message Signs
- Beacon lights on radio towers and base stations
- Other outages
- 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 though non-routine maintenance pay item GRB1, which shall be payment in full for all required materials, labor and equipment. The Contractor shall track on a spreadsheet cumulative contract year data of the relamping date of each tower, and each beacon light on a light tower. The spreadsheet shall be transmitted in the monthly routine work submittal.

7 Day Outage Repairs

Unless specified in system articles herein, 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 any repair delay.

Documentation

The Department shall furnish the Contractor the form for the daily, and summarized weekly and final outage repair reports at the Pre-Construction Meeting. The submittal shall show county, location, and category of work performed including:

- Number of patrol survey outages found and repaired by category
- Number of repair crew outages found and repaired
- Equipment repairs made by work crew (ballast change, lamp, etc.)
- Ticket numbers for locations where repair work was not completed

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 for each system shall be signed by the supervisor for the crew performing the outage repairs, stating that the repair quantity is correct and that the relamp was completed in accordance with contract specifications, and shall be transmitted in the monthly routine work submittal.

In addition to the summarized weekly and monthly outage reports the Contractor shall provide a Repeat Outage Report, an Excel spreadsheet and/or EMCIT report, a monthly and cumulative listing by database location number, location address (main route and cross street), cabinet number, and pole/unit number; which has experienced a repeated outage during the Contract year.

Due to the detailed and extensive reporting required for the Repeat Outage Report it is suggested that the Contractor use the EMCIT to develop a form for his outage reporting. No additional payment will be provided to the Contractor for the EMCIT program development or reporting. The Repeat Outage Report shall be transmitted monthly to the Engineer in the routine work submittal.

4.10.3 RED-LIGHT RUNNING CAMERA, EVP, TSP, BRT, QUEUE JUMPING SURVEY

The Contractor shall keep current the EMCMS/EMCIT and an Excel spreadsheet list of locations with red-light running cameras, emergency vehicle preemption (EVP), Transit Signal Priority (TSP), Bus Rapid Transit (BRT) 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, emergency vehicle preemption (EVP), Transit Signal Priority (TSP), Bus Rapid Transit (BRT) and traffic monitoring camera locations, the agency responsible for their installation, and report the installations or removals once per month on a cumulative yearly spreadsheet using Excel, to be transmitted in the monthly routine work submittal.

4.11 COORDINATION WITH ELECTRICAL 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 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 provide the technical expertise to assist the Electrical Maintenance Engineer and/or IDOT Construction Engineer/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.

There will be official 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 ComEd Accounts, meter numbers, transformer and lock and key numbers) or the removal/installation of equipment, by system, on an Excel spreadsheet which is transmitted to the Engineer monthly in the routine work submittal.

New or Existing Maintenance Transfer of System Location(s)

The Contractor shall provide a qualified representative(s) for each system location to perform the transfer of maintenance, inspection that requires a new or existing lighting installation to be added to the Contract or the transfer of an existing lighting installation of this Contract to another agency or contractor to perform the inspection and transfer(s):

- Assure all fiber/copper cable test results meets or exceeds the Standard Specifications for Road and Bridge Construction and manufacturer's Specifications.
- Inspect and test all equipment, devices and its operation including but not limited to induction loop, CCTV, controller cabinet, circuits, wiring, controls and material insuring that it conforms to the Standard Specifications for Road and Bridge Construction and as specified herein.
- Inspect and verify the controller program provided by the controller manufacturer to insure that it meets Department standards.
- Inspect each location to determine the completion of construction punch lists as directed by the 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.

Transfer of Location Maintenance Responsibility to EMC

The Contractor shall inspect construction work, permit work or other State of Illinois facilities for acceptance by the Department. The Contractor shall notify 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 shall take maintenance responsibility for system work accepted by the Engineer. The Contractor shall take GPS recording of cabinets, light poles, towers, JB, splices, MH, and cameras locations and submit on an Excel spreadsheet as specified in Article 4.17.7 for GPS documentation. This work shall be applicable to all systems and its components.

At the time of the maintenance transfer, if the installing Contractor is providing GPS recordings (in the format as specified herein) of cabinets, light poles, towers, junction boxes, splices, manholes, and cameras, it will be acceptable to the Department, otherwise the EMC Contractor shall provide this information as specified herein.

Transfer of Location Maintenance Responsibility from EMC

The Contractor shall conduct a site meeting inspection with the third party contractor. A corrective work list shall be prepared by the Contractor. The Contractor shall be required to correct any outstanding deficiencies though routine maintenance as approved by the Engineer. The Contractor shall perform a physical inspection while video recording all equipment in detail, to document its condition. The video recording shall show the existing condition of light poles, towers, foundations, luminaire operation, cabinets and electrical components, wiring and conduits wherever applicable, including but not limited to junction boxes, mounting brackets, lowering devices etc. and shall test all equipment and its operation. The tests shall include Megger testing, continuity testing, voltage, current draw of each circuit, ground resistance, neutral current etc. This work shall be applicable to all systems and its components.

The Engineer shall determine which electrical systems are videotaped at transfers. Traffic Signal transfers area not normally video-taped. On the day of the official transfer the Contractor shall provide a record of the corrective work list and repairs and test results on flash drives and the video recording on DVD's and deliver to:

- IDOT Engineer
- Third party contractor(s)
- Construction R.E.

4.13 EMCMS/EMCIT MAINTENANCE TRANSFER DOCUMENTATION

Immediately upon acceptance of routine maintenance responsibilities or transfer of maintenance responsibilities to another entity, the Contractor representative shall notify the EMC Dispatch Center with the following information in order that they may complete a Maintenance Transfer Log and enter into the EMCMS (or EMCIT if programming developed) all applicable data:

- Date and time of maintenance transfer
- Names of all individuals in attendance and their companies or agencies
- County and City name
- Name of Installer (if new equipment is coming on maintenance)
- Name of Owner (provide address and telephone number if new to database)

- Name of Maintainer (provide address and telephone number if new to database)
- Name of Contractor who will be responsible for electrical maintenance (provide address and telephone number if new to database)
- EMC Maintenance: YES, NO, or PARTIAL
- Type Maintenance (refer to EMCMS codes)
- Patrolman Information (assignment, week, day, stop)
- Location number
- Main Route and Cross Street
- Cabinet (if applicable)
- RR interconnect (yes or no)
- Traffic Signal System Equipment (yes or no)
- L.E.D. (yes or no)
- Battery Backup/UPS (yes or no)
- Red Lighting Running Camera (yes or no)
- Emergency Vehicle Pre-emption (yes or no)
- Transit Signal Priority or Bus Rapid Transit (yes or no)
- Traffic Management Equipment (i.e., Lake County PASSAGE) (yes or no)
- Maintenance Transfer (Add On, Take Off, or Remove)
- List of Partial Equipment to be maintained (or not maintained) for Notes Page
- IDOT or ISHTA contract number
- IDOT Contract or Permit number
- Local Roads and Streets Section number
- Other remarks as appropriate

The EMC Dispatch Center staff shall send the completed Maintenance Transfer Log to the Engineer, System Managers, and assigned IDOT Inspectors via email and/or fax within two hours following the completion of the maintenance transfer. (Note the Department is responsible to enter new or delete electrical system locations, or change the location ownership in the EMCMS/EMCIT.) Also review Article 10.0 for specific Traffic Signal Maintenance Transfer requirements. Review Article 5.0 for Maintenance Transfer Summary Report requirements.

If errors are found in any maintenance transfer log or EMCMS/EMCIT data entry, it is the responsibility of the Contractor to immediately notify the Engineer by email with specific details. Correct data in the EMCMS/EMCIT Locate Location screen is the responsibility of the Contractor.

4.14 MATERIAL AND EQUIPMENT

4.14.1 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.

4.14.2 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 Surveillance System 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.

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 the submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will be 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.

4.14.3 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.

4.14.4 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.

4.14.5 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.

4.14.6 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.

4.15 CONTRACTOR MATERIAL STARTING QUANTITIES

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 materials furnished by the Contractor shall be 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, 2015 to agree on the minimum quantity of materials which the Contractor shall have in his possession at the start of this Contract.

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 materials. The additional cost of purchasing and storing the required parts inventory shall be borne solely by the Contractor.

A shortage of any materials, parts, or equipment causing delays in the implementation of replacements of materials or repairs shall be sufficient cause to assess liquidated damages. The Contractor shall submit anticipated schedule(s) for ordered replacement items when requested by the Engineer. The Engineer may inspect the Contractor's spare parts inventory at any time as deemed necessary.

The following charts provide a suggested list of Contractor owned spare parts starting quantities of materials effective for January 1, 2016.

QTY	LIGHTING SYSTEM – SUGGESTED STARTING QUANTITIES
3	Luminaire, HPS, 230 Volt, 200 W
3	Luminaire, HPS, 230 Volt, 310 W
10	Luminaire, HPS, 230 Volt, 400 W
3	Luminaire, HPS, 240 Volt, 1000 W
10	Luminaire, LPS, 230 Volt, 55 W
2	Cabinet, 240 Volt, 200 Amp, with MOSCAD Radio
3000 ft	Wire, #4 Quadraplex
2	Aluminum Light Pole, 11.5" BC, 32 Ft, 8 x 4.5", .250 Wall
5	Aluminum Light Pole, 15.0" BC, 39 Ft, 10 x 6", .250 Wall
10	Aluminum Light Pole, 15.0" BC, 45 Ft, 10 x 6", .250 Wall
2	Aluminum Light Pole, 15.0" BC, 55 Ft, 10 x 6", .250 Wall
2	Davit Pole, 15.0" BC, 31 Ft
2	Davit Pole, 15.0" BC, 39 Ft
2	Truss Arm, 8 Ft, 4", 34" Rise

5	Truss Arm, 10 Ft, 4”, 34” Rise
5	Truss Arm, 12 Ft, 4”, 34” Rise
5	Truss Arm, 15 Ft, 4”, 34” Rise
5	Truss Arm, 8 Ft, 6”, 34” Rise
2	Truss Arm, 8 Ft, 6”, 48” Rise
5	Truss Arm, 12 Ft, 6”, 34” Rise
2	Truss Arm, 12 Ft, 6”, 48” Rise
5	Truss Arm, 15 Ft, 6”, 34” Rise
5	Truss Arm, 15 Ft, 6”, 48” Rise
2	Truss Arm, 15 Ft, 6”, 72” Rise
2	Davit Arm, Twin, 8 Ft
2	Davit Arm, 8 Ft
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	Fiberglass Shroud, 15.0”
5	Fiberglass Shroud, 15.0”
25	Aluminum Skirt, 11.5”
25	Aluminum Skirt, 15.0”

QTY	PUMP STATION SYSTEM – SUGGESTED STARTING QUANTITIES
6	AEGIS EPROM Chips
3	Pump, 4” to de-water the PS, 480/240 volts
1	Pump, 3” to de-water the PS, 480/240 volts
3	Compressors (gas)
3	Solenoids
1	Power Supply, 12 V
6	Relays, 120 V
6	Relays, 12 V
2	Level Transducers

QTY	SURVEILLANCE SYSTEM – SUGGESTED STARTING QUANTITIES
5	Traffic Signal Bases
10	Traffic Signal Posts of Various Sizes
20	Signal Head, 8” Section
10	Signal Head, LED 8” Section
3	Wood Posts for Flasher, 6” x 6” x 10 Ft

QTY	TRAFFIC SIGNAL SYSTEM – SUGGESTED STARTING QUANTITIES
5	Cabinets and Econolight Controller Assemblies, TS-2, Type 1, 16 Phase
2	Cabinets and Eagle/Siemens Controller Assemblies, TS 2, Type 1, 16 Phase
10	Controllers, TS 2, Type 1
2	Econolite Master Controllers
2	Eagle/Siemens Master Controllers
10	Mast Arm Pole Assemblies of Various Lengths with Foundation Bolts

3	Electrical Service Disconnects
15	Conflict Monitors and Malfunction Management Units (MMUs)
40	Detector Amplifiers – Rack and Shelf
10	BIU's
50	Traffic Signal Posts of Various Sizes
30	Signal Heads, 12-inch, with LED Modules of various numbers of sections
20	Signal Head Mounting Hardware – Mast Arm Mounted
50	Signal Head Mounting Hardware – Post Mounted
2	Controller and Cabinet Assemblies with Railroad Security Software (one each Econolite and Eagle/Siemens), TS 2, Type 1 or Type 2

4.16 OUTDOOR SITE MAINTENANCE

The Contractor shall employ the services of a grounds maintenance service crew(s), which does not need to be in an electrical union. The crew shall be responsible for completing work on time and to a high level of quality as specified herein and directed by the Engineer. The work shall include, but is not limited to, mowing, trimming, mulching, weeding, leaf removal and cutting down tree limbs, picking-up trash and debris, and in the winter removing snow and ice by shoveling, plowing of sidewalks, parking areas and driveways, and salting walkways and driveways. Refer to systems articles herein for specific work items. The Engineer shall provide the Contractor a priority list of locations for spring/summer and fall/winter maintenance.

- The grass shall be cut to a minimum of 3" and shall not exceed 6".
- Snow and ice removal shall be performed on sidewalks, walkways and stairways any time it is present
- Snow plowing shall be performed on driveways and parking areas whenever there is more than a 2" snowfall

Qualifications shall be:

- Minimum of 3 years landscaping experience (not just cutting grass) and snow and ice removal operations
- Excellent time management skills
- Have experience with commercial mowing equipment
- Have experience with power tools and equipment used in grounds maintenance
- Knowledge of health and safety regulations, and traffic control
- Have the knowledge and training to work at or near electrical equipment

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 by last name first, fleet management vehicle assignment number and identification code and vehicle number,

cell phone number, description of work assignment(s) both routine and non-routine for all systems, the location number, and ticket number or authorization number if applicable.

At the end of each month the Contractor shall compile a monthly cumulative report of all the daily agendas by System, by date, and transmit in the monthly routine work submittal. The Engineer will furnish a sample monthly cumulative Agenda Report at the Pre-Construction meeting.

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.

When work is not completed which was listed on the Daily Agenda, it shall be re-listed on the next day's Daily Agenda with an asterisk and an explanation for the delay.

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 TICKETS

The use of Tickets for the documentation of Contractor response and work on system equipment is integral to the Contract. The Contractor shall have access to EMCIT software as described herein to fulfill reporting and dispatching requirements of the Contract. Refer to Article 6.0 for software requirements. The data and reports shall be available to Department personnel for viewing at any time 24/7. The Contractor shall provide staffing to assemble the EMCIT data to provide customized reports immediately upon the request of the Engineer. At the end of the Contract term the Contractor shall provide the Department a copy of all data entered and all reports available on the EMCIT. The EMCIT system shall be maintained and all user licensing and fees for the complete system shall be paid under routine maintenance. The EMCIT shall be operational and ready on or before December 15, 2015.

Trained Contractor Dispatch Center personnel shall create all Tickets on the EMCIT. A separate database or numbering system will not be allowed. The Contract number and

year will automatically be generated and Ticket numbers will be sequentially assigned. One Ticket number will be used for all work activities related to the original work assignment. The Contractor shall use the EMCMS for location database information until such time that information is available on the EMCIT.

The Contractor is responsible for all Ticket entries; however, the Contractor shall provide the Department one screen (or fields) for entry and/or correction of Motorist Caused Damage information for the state's Claims Department processing. Examples would be entry of Claims processing number and date, or correction of ComCenter incident report information or police accident number entries.

The average number of Tickets created by the Contractor in the past five years is about 10,000 (review Ticket charts herein). The Contract Dispatch Center personnel shall be familiar with electrical and/or EMC terminology in order to provide acceptable service to the Department.

The EMCIT software is designed so that Contractor personnel directly type Ticket entries while callers are on the telephone. With the new Fleet Management software (refer to Article 9.0) Contract personnel in field who are near the location of the incident received can be dispatched and provided the Ticket information via a tablet or smart-phone.

It is expected, however, that Contractor dispatch personnel will need a transition period in 2016 to the new system so they may end their use of hand-written sheets when accepting information from callers and dispatching Contractor personnel in the field.

The Contractor shall have sufficient dispatch personnel to create the EMCIT Ticket and dispatch Contractor personnel within fifteen (15) minutes upon the notification (from IDOT, Contractor , Agency, or Citizen, etc.) of a malfunction, incident or request at a state owned location. In storm or other emergency situations the Contractor shall call-in additional dispatch personnel to handle the call load.

Contract staffing shall be sufficient so that Patrolmen are dispatched immediately and can respond to the specified location within the one (1) hour requirement herein.

It is the responsibility of the Contractor to provide sufficient staff to review the Ticket coding on a daily basis to assure correct information is entered. IDOT inspectors also monitor the ticket coding and ticket information input and shall require the Contractor to make corrections and/or void duplicate Tickets.

Ticket Entry Information

Following is a list of information currently required to be recorded on Tickets by the Contractor. The required information fields may be changed only upon the direction of the Engineer.

Tickets shall be coded by System and type of equipment which has the problem or malfunction reported:

EQ Equipment Operational Problems, Not Damage

- BA REVLAC Barrier
- CB Cabinet Malfunctions
- CM Camera/Closed Circuit TV
- CT Cable Trouble
- FO Fiber Optic
- LP Loop Problem
- SO Single Outage
- MT Multiple Outages
- RM Ramp Metering
- TM Timing Problem

BR Billing Request (3rd party requests work, formerly WR ticket type)

DA Equipment Damage by Natural Forces, not motorist caused

MC Motorist Caused Damage

NT INET Work Request

GB 3rd Party Damage – Contractor General Billing

ID IDOT "Hold" (Used on Authority of IDOT Personnel)

OM Off Maintenance – Location Not Currently Maintained by the Contractor

RR Routine Work - Requested by IDOT personnel

RW Routine Work – Required Work in Contract (usually preventive maintenance programs)

SR Service Request – Meeting to be held or Patrolman requested to obtain information

UT Utility (Responsible)

VO Void – Duplicate Tickets

WA Working upon Arrival or Working as Programmed

Other Ticket types may be created by the Department as necessary.

At the time the Ticket is created in the EMCIT the following information shall be entered:

- System
- Ticket Type
- Date Received
- Time Received
- Received By (Contractor Dispatcher Initials)
- Informant (Police Dept/IDOT/Contractor/ Patrolman/etc.)
- Police/Agency (If Informant was PD, enter City or County name, for all other situations enter Name)
- Informant Telephone Number
- State (ComCenter) Incident #
- Police Accident # (Request from caller)
- F.O.P. (If Found on Patrol enter Yes)
- Patrolman's Call # (If F.O.P.)
- Location reported (as much information as received)
- Cabinet or Power Center # (to be verified upon Patrolman's arrival)
- Pole, Quad, or Unit # (to be verified upon Patrolman's arrival)
- Alarm (if Yes, state Type)
- AEGIS (if Yes, list #)
- SCADA (if Yes, list #)
- Other Information
- Directions (if necessary)
- Time Patrolman was Dispatched
- Patrolman # who was Dispatched
- Patrolman Vehicle Number and Fleet Management ID
- EMCMS Location # (after look-up confirmation) (to be verified upon Patrolman arrival at the location)

Within one (1) hour of creating the EMCIT Ticket (or sooner, upon response by Patrolman) the following field response information shall be entered in the EMCIT Ticket, via tablet or smartphone by the Patrolman:

- Time Arrived and Date
- Pole/Quad/Unit # (verified)
- Photo taken (Yes or No)
- Item Found
- Action Taken
- Follow Up Needed (Yes or No)
- Action: T (temporary) or P (permanent)
- If Permanent, enter Perm Date and Time
- Describe Work
- Controlling Item (if applicable)
- W.O.P. (Water on Pavement) (Yes or No) (If yes, give details)
- Time Departed (cleared) and Date

- Notification Information (name, date, time) for Off-Maintenance Locations or Non-State Owned Locations (refer below to Incidents at Non-State Maintained Locations)

If the Ticket requires Crew Follow-Up the following information is entered:

- Arrival Date
- Time Arrived
- Time Departed
- Call # of Foreman
- Initial Follow-Up (description of work)
- Action Taken
- Action: T (temporary) or P (permanent)
- If Permanent, enter Perm Date and Time
- Follow Up Needed (Yes or No)
- Follow Up Action Needed
- Controlling Item

Communication with the IDOT ComCenter

When an IDOT ComCenter notifies the EMC Dispatch of an incident the Contractor must notify the IDOT ComCenter when the incident has been cleared by the Patrolman or other Contractor personnel. It is not necessary to provide the ComCenter with repair dates and/or information regarding the repairs. The following information is required in the EMCIT ticket:

- State Incident #
- Contractor Dispatcher Initials (who cleared with State)
- Clear Date (1st response)
- Clear Time (1st response)
- Name of IDOT ComCenter Dispatcher notified

The EMC Dispatch personnel shall be provided with EMCMS 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 (or on EMCIT if programmed). 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.

It is the responsibility of the Contractor to address telephone calls from the ComCenter as to ownership, and/or maintainer/contractor information, if known.

During certain emergency situations it may be necessary that the Contractor Dispatch personnel provide periodical updates on estimated time of arrival when requested by 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 Contractor 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 and/or contractor.

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 and/or contractor.

Transmitting Ticket Summary Information

The Contractor shall transmit the Excel version (searchable copy, not pdf) of the EMCIT ticket summary by email to the Bureau of Traffic Operations and Maintenance Sections by 8:30 A.M., Monday through Friday. This report shall account for all tickets created from 7 a.m. the prior day to 7 a.m. the current day. The Monday ticket summary shall account for the time period from Friday 7 a.m. through Monday at 7 a.m.

Ticket Documentation for Declared Disasters

Although the dispatching and immediate response of Contractor personnel is the priority of any Declared Disaster (or potential Declared Disaster), properly documented Ticket information is necessary for the Damage Repair Submittal form and Detailed Damage Inspection Report, requirements for possible additional payment to the Contractor when there is a Declared Disaster. Refer to Article 4.5 Special Response Situations herein.

4.17.5 THIS ARTICLE IS INTENTIONALLY LEFT OPEN

4.17.6 MONTHLY ROUTINE WORK SUBMITTAL

On the fifth business day of each month the Contractor shall submit to the Engineer a flash drive which contains the required documentation of the various items of work as required herein, for the prior month. A chart shall be provided to the Contractor at the Pre-Bid meeting which lists items due in the monthly routine work submittal.

4.17.7 GPS DOCUMENTATION

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
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.

A handheld mapping grade GPS device shall be used for the data collection. The receiver shall support differential correction and data shall have 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 six (6) years.

The manufacturer and model of the GPS device shall be identified as well as any software used on the device and in post processing.

The Contractor shall maintain the existing IDOT database and provide data entry for all new locations that shall include but not limited to GPS locations for Lighting, Traffic Signals, and Surveillance Systems, and fiber and equipment located under this Contract or provided by the Engineer.

5.0 MONTHLY ROUTINE MAINTENANCE AND ADDITIONAL NON-ROUTINE PAYMENT

5.1 ROUTINE MAINTENANCE BID

The Section 3 of Contract lists quantities of locations by System, which are either ON-maintenance (currently maintained by the state's maintenance contractor), or Planned Maintenance locations (locations not currently maintained by the state's maintenance contractor or locations under construction or locations projected by the Department to go under construction), at the time of this Contract preparation, in May-July, 2015.

In Article 2.0, the Schedule of Prices, the Contractor is provided a bid list of locations; locations shown by electrical system which are ON-maintenance (4460) and planned maintenance locations (290). The Contractor shall provide a lump sum bid price, per month, multiplied by the total location number shown (ON-maintenance and Planned Maintenance locations) to arrive at the yearly Routine Maintenance Bid Amount. Each monthly pay period shall be a calendar month.

Although the Department cannot predict which of the planned maintenance locations as listed in Section 3 (or other new locations) will be maintained (ON-maintenance) at the start of this Contract on January 1, 2016, the two hundred ninety (290) is the allowed bid number.

The Contractor will be furnished with the list of locations to be maintained through routine maintenance as of January 1, 2016 (the Contract List of Locations).

At the end of each month, after the reconciling of location status, the Contractor and the Engineer shall agree on the total of locations maintained for the month (on-maintenance as of the last calendar day of the month). If the number of locations maintained for the month is less than 4750 the Contractor will be paid the monthly bid lump sum amount for maintenance. If the number of locations maintained for the month is more than 4750 the Contractor will be paid an additional non-routine payment per each location.

5.2 ADDITIONAL NON-ROUTINE PAYMENT FOR ADDITIONAL LOCATIONS

In addition to the lump sum monthly routine maintenance payment the Contractor shall be paid per (each) location maintained per month over the total of 4750, a non-routine bid price, pay item RML1.

When the Department adds equipment, as an example cameras or combo lighting, to an existing location (any system) there will not be additional routine or non-routine maintenance payment. Locations which have items of equipment which are incidental to the routine maintenance payment of a location at the time this Contract was written are listed in the System Articles herein.

5.3 MAINTENANCE TRANSFER SUMMARY AND SYSTEM QUANTITY REPORT

The Contractor's assigned personnel shall review the Maintenance Transfer Logs and provide the Engineer a listing of all the Maintenance Transfer Logs for the prior month, the Maintenance Transfer Summary Report, (an Excel spreadsheet). The Maintenance Transfer Summary shall be submitted to the Engineer by email by the end of the 2nd work day of the next maintenance month. The Contractor cannot proceed with the submittal of an Additional Locations Report or the Contract List of Locations until the Engineer approves the Maintenance Transfer Summary and System Quantity Report. The Engineer shall provide the format for the Maintenance Transfer Summary at the Pre-Construction meeting. Review also Article 4.13 EMCMS/EMCIT Maintenance Transfer of Locations.

5.4 SYSTEM LOCATION QUANTITIES REPORT

After the Contractor has accounted for all the maintenance transfers, the four electrical Systems Quantity Reports can be prepared. Each report shall be prepared as an Excel formatted chart of locations by system equipment type, by County, by System, a count of locations on-maintenance, partial-maintenance, and off-maintenance. The counts must match the revised Contract List of Locations totals, and all maintenance transfers must be highlighted on the reports. The System Location Quantities Report is transmitted to the Engineer by email by the end of the 2nd work day of the next maintenance month. The Contractor cannot proceed with the submittal of the NEW Locations Report or the Contract List of Locations until the Engineer approves the Maintenance Transfer Summary and System Quantity Reports. The Engineer shall provide the format for the Maintenance Transfer Summary at the Pre-Construction meeting.

5.5 CONTRACT LIST OF LOCATIONS AND ADDITIONAL LOCATIONS REPORT

It is the responsibility of the Contractor to keep the Contract List of Locations, updating each Contract location's system equipment type status as to on-maintenance, partial-maintenance, and off-maintenance, the applicable transfer dates, ownership, contractor, county, city, railroad inter-connect, LED signal, EVP, construction contractor, etc. As new locations come on-maintenance they shall be added to the on-maintenance list, and their status kept current. The Contractor shall also keep an Excel spreadsheet report of the Additional Locations for Routine Maintenance payment. These reports shall be transmitted to the Engineer monthly in the routine maintenance work submittal.

5.6 ROUTINE MAINTENANCE AUTHORIZATION FOR PAYMENT

When the Engineer has determined that all monthly routine work submittals are complete, a monthly routine maintenance authorization letter shall be transmitted to the Contractor, which authorizes payment of:

- Prior month's routine maintenance work, (the monthly lump sum bid dollar amount)
- Accepted NEW routine maintained locations (non-routine one-time bid item amounts)
- Credits

'and deducts:

- Debits, withholding, or liquidated damages
- Deducts motorist caused damage statements (paid through IDOT Springfield, refer to Article 4.9.5)

The Contractor shall create the monthly routine maintenance invoice from the monthly routine maintenance authorization, and bring to the monthly pay meeting.

When routine maintenance work completion is severely delayed or deficient or the routine maintenance work submittal documentation 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.

ARTICLE 6.0 – NON-ROUTINE MAINTENANCE WORK AND PAYMENT

6.1 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/EMCIT 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.

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 contract spare parts inventory or from other vendor sources available to 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.

At the request of the Engineer, the Contractor shall be required to perform routine and/or non-routine work at locations not maintained by the Contractor and/or not listed herein, at contract unit prices. This work can be at locations under construction, off maintenance, at State of Illinois facilities, or on equipment in District 1.

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.

The Contractor shall obtain and modify the applicable plan sheets to reflect routine or non-routine work performed, or 3rd party work requested and approved. The Contractor shall also provide vendor invoices and time records of labor, material and equipment used on the job for documentation of the work. All invoices, including vendor invoices, must separate the material costs, labor costs, and equipment costs. A lump sum invoice is not allowed.

6.2 EQUIPMENT RATE SUBMITTALS(OWNED, LEASED OR RENTED)

By January 1, 2016 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 field use vehicles and construction equipment to be utilized on the Contract noting purchase or lease 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 year of purchase, per model/function, (backhoe, scissors-lift, state of operation, etc.); to arrive at an hourly operating price which will be entered into the EMCMS/EMCIT for non-routine agreed price and force account work for the first half of 2016.

There shall be no changes in prices until July 1st, when the Contractor shall re-submit the applicable equipment pages from the most recent Equipment Watch Rental Rate Blue Book and yearly revised labor rates and both will be updated in the EMCMS/EMCIT for use in the second half of 2016. A separate standby time hourly rate for equipment will not be paid. If this contract is renewed the same January 1st and July 1st dates will apply for Equipment Watch Rental Rate Blue Book and labor rate submittals.

Although it is not encouraged, it is permissible for the Contractor to rent equipment for non-routine (or MCHD repair) Contract work, however, the payment by the Department will be on the basis of the Blue Book Rental Rates, not the vendor rental invoice. In order to be paid for vendor rented equipment the Contractor must submit a confirmation statement from the vendor with the name of the manufacturer, and model number of the rented vendor equipment and the applicable sheet from the Equipment Watch Rental Rate Blue Book with the other required documentation for the authorization for payment.

6.3 COMPLETION OF WORK

The Contractor has ninety (90) days to complete non-routine work, unless other terms are agreed with the Engineer. If work is not completed in the agreed timeframe the Contractor may be subject to the terms of Unsatisfactory Work per Article 3.5.3 and/or liquidated damages per Article 3.5.5.

The Contractor shall provide time records of labor, material and equipment used on the job including vendor invoices breakdown and catalog cuts with each non-routine work authorization completed for payment.

6.4 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 herein) bid on this contract for the various non-routine work items.

The Engineer shall issue a Non-Routine authorization letter on the EMCMS/EMCIT for unit price work, prior to the start of work. In some cases quantities may be estimated and will be based upon the initial scope of work. The quantities may be revised following the Engineer's inspection of the work, before the Contractor may invoice the work. Refer to Article 4.8 for Contractor requirements to assist the Engineer in determining scope of work; providing measurements, sketches, etc.

6.5 AGREED-PRICE AUTHORIZATIONS

Agreed-price, non-routine work shall consist of work for which bid unit prices are not applicable.

Upon receiving a quote work request from the Engineer, the Contractor shall provide a fixed quote for the work and scan and e-mail to the Engineer within five (5) working days from the initial request. Quote cost breakdown shall be provided with vendors catalog cuts and any additional paperwork to explain details or provide justification of the labor or material costs. In some cases, at the request of the Engineer, the Contractor shall provide three (3) quotes from different vendors.

Upon Engineer's quote approval, the Contractor shall create a quote for the work in the EMCMS/EMCIT, using applicable contract labor and equipment rates and necessary materials. When the agreed price work requires materials to be furnished and installed, the Contractor quote may include a fifteen percent mark-up per Article 109.04(b)(3) of the Standard Specifications.

One quote shall be necessary for each non-routine authorization letter. Once the quoted work price is agreed by the Engineer and authorized in the EMCMS/EMCIT the Contractor cannot make revisions. The quote submitted to the Department should take into account the expected completion date of the work.

Once the work starts the Contractor shall immediately notify the Engineer of any unforeseen problems discovered. Upon completion of the work the Contractor shall furnish the Engineer documentation as specified herein Requirements for Final Payment of Non-Routine Work.

The labor price for EMC agreed-price or force account work is determined in June of each year from the approved union labor rates for force account work in District 1.

A general foreman's time shall not be quoted for work unless there are more than five (5) additional crew workers employed at any one time, place and job.

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 the Contract Spare Parts Inventory.

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.

6.6 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 full documentation of materials furnished with accompanying purchase invoices from the vendor, shall be submitted to the Engineer within seven (7) working days following the completion of work. The General Billing Log form shall be provided to the Contractor at the pre-construction meeting.

A mark-up of fifteen (15) percent is allowed for material costs, which shall include any shipping and handling fees.

A general foreman's time or any overtime and/or prime time billing for any personnel will not be billable on authorized force account work unless prior, written approval is received from the Engineer. 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.

Equipment costs are applicable for Force Account Work as specified herein Article 6.1.

6.7 EXPENSES INCURRED BY THE DEPARTMENT

In accordance with Article 109.05 of the Standard Specifications for Road and Bridge construction, 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.

6.8 ACCEPTANCE OF NON-ROUTINE WORK ASSIGNMENTS

It is the Contractor's responsibility to review daily, on the EMCMS/EMCIT, 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. The Contractor may contact the Engineer to request a later work completion date than the normal ninety (90) days, 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.

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/EMCIT within five (5) working days shall be subject to the assessment of liquidated damages.

6.9 NON-ROUTINE WORK COMPLETION REQUIREMENTS

When the work is complete the Contractor shall enter the work completion date in the EMCMS or EMCIT authorization letter.

If authorized work is from the EMCMS the Contractor shall print a hard copy of the authorization letter, note any pay item quantity changes on the letter, stamp or highlight in italics "COMPLETED WORK" on the letter, attach any modified record drawings, catalog cuts, time records for labor and equipment scan and email to the Engineer for approval.

If authorized work is from the EMCIT the Contractor shall transmit the authorization to the author of the authorization letter with the subject line of Ready for Inspection – Location ____, and attach any modified record drawings, catalog cuts, time records for labor and equipment, photos as requested, scan and email to the Engineer.

6.10 AUTHORIZED WORK INSPECTION APPROVAL

The Contractor shall notify the Engineer via e-mail, one day, (24 hours), prior to the Contractor's – work completion of the authorized work in order that a joint EMC/IDOT inspection of the work shall be held.

When all required documentation of work has been received, the Engineer shall review the submittal and may request the Contractor to assist at a final field inspection. Once the Engineer has approved the work the final non-routine work authorization shall be transmitted via the EMCMS/EMCIT to the Contractor so an invoice may be prepared. The Department is under no obligation to approve any non-routine work without receiving scanned documentation.

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.

6.11 EMCMS/EMCIT AUTHORIZATION CORRECTIVE WORK LIST

The Engineer shall issue a corrective work list (CWL) on the EMCMS/EMCIT for any deficiencies found during IDOT inspections of the Contractor's work, The Contractor should view the EMCMS/EMCIT 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 for re-inspection.

6.12 EMCMS/EMCIT FINAL AUTHORIZATION LETTER

The Contractor shall review daily, on the EMCMS/EMCIT, the list of authorizations which have had the final transmittal to the Contractor, and subsequently view and print the final non-routine work authorization letter. The final authorization letter shall be signed by the System Foreman completing the work, and shall accompany the Contractor's invoice.

6.13 EMCMS/EMCIT NON-ROUTINE WORK INVOICE

The Contractor shall prepare an EMCMS/EMCIT invoice for each Final Authorization letter. Each EMCMS/EMCIT 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/EMCIT form requirements. The invoice number is required to be the same as the non-routine work authorization number as issued by the Department. 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. An original signed invoice with two copies and an original signed final authorization letter with two copies shall be submitted to the Department no later than 30 days following work completion approval by the Engineer. Normal processing time for non-routine work payment to the Contractor, once it is processed by the IDOT Financial Department is 8 to 12 weeks.

6.14 PAYMENT TO SPECIALTY VENDORS

Refer to Article 6.7 for a definition of non-routine work authorization for Expenses Incurred by the Department. Within seven (7) days following the EMCMS/EMCIT entry of the date the work was scheduled for payment, the Contractor shall pay the specialty vendor invoice, and scan via e-mail a confirmation of the payment with check number to the Engineer.

6.15 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). (This report may be printed from the EMCIT reports, when the programming is completed.)

ARTICLE 7.0 -- LIGHTING SYSTEM

7.1 SYSTEM DESCRIPTION AND MAINTENANCE RESPONSIBILITIES

The Lighting System consists of highway lighting, sign illumination, underpass/ tunnel lighting, and navigational lighting, potentially 550 independently controlled installations on the expressways, primary highways, and navigation channels in District 1, and other specific electrical items at facilities throughout District 1.

The lighting installations include various types of lighting fixtures and lamps, lenses, reflectors, shields, poles, mast arms, high mast towers with associated equipment and cameras with associated power and communication equipment and devices including all associated hardware and software, mounting devices, supporting unistrut (U-channels), step-down or buck-boost transformers, electrical service equipment, devices, 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.

Specific Electrical Equipment to be maintained, at facilities specified herein:

Emergency Traffic Patrol Office (ETP)
(Outdoor and indoor lighting system and service entrance equipment, emergency/exit lighting, switches, outlets and other electrical equipment)

Maintenance Yards, Sign Shops, Storage Areas
(Indoor and outdoor lighting and its control equipment, emergency/exit lights, light switches, GFCI outlets, salt dome storage lighting, and proper electrical operations of lift motors and pumps, asphalt heating tanks, calcium chloride spray pumps its controllers, electrical equipment, pressure washer pumps, exhaust fans, and other items as listed in the Special Use equipment Article 7.4.13.

Materials Labs
(Indoor and outdoor lighting and its control equipment, emergency/exit lights, light switches, GFCI outlets, and power to test ovens, and other electrical testing equipment)

Matteson Flood Warning System
(Gates at Governors Hwy @ 214th St. and Governors Hwy @ 219th St.)

- 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

Moveable Bridge Video Monitoring and Bridge Control Areas
(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. Maintenance also includes the traffic signals and audible alerts for vehicular traffic on the moveable bridges which are powered from and controlled by the moveable bridge equipment)

Rest Areas
(Exterior and interior lighting, lighting inside public washrooms, emergency/exit light and all panels, controls, HVAC units, exhaust fans, outlets and well pump)

State Police Elgin Facility
(Outdoor Lighting only)

Weigh Stations
(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, weigh station “open/closed” sign equipment (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.

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.

The Rodenburg and Woodstock Maintenance Yards have base station equipment to be maintained under routine maintenance by the Contractor; refer to Article 9.0. Generators shall be maintained as specified in Article 8.0.

Surveillance traffic monitoring cameras as listed in Article 7.7 and the cameras and associated equipment at the Joliet Moveable Bridge locations, (inspections in Article 7.5.4) are paid through routine maintenance of the Lighting System but are maintained as specified in Article 9.0 Surveillance System.

7.2 LIGHTING SYSTEM ROUTINE MAINTENANCE SYSTEM EQUIPMENT TYPES

The routine maintenance system equipment types for the lighting system are as follows:

- On-Expressway: Lighting system locations on Interstate Highways and their extensions leading in to State and/or US Routes

- Arterials: Lighting systems at off-expressway locations, where the number of luminaires at the location are greater than 12

- Small/Arterial & Nav Lighting : Lighting system locations on State maintained routes, where the number of luminaires at the location are less than or equal to 12, or navigational lighting

- Specific Electrical Equipment at facilities (refer to Article 7.1)

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.

- **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

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
Navigation light outage, single	N/A	1 day	7 calendar days
Single Outage on Pole, Tower, In Underpass or on Sign(includes those found by Night Patrol)	N/A	N/A	7 calendar days
Moveable Bridge Problems	1 hour	4 hours	2 working days
Weigh Stations/Rest Areas/State Police Facilities	1 hour	4 hours	7 calendar days
Emergency Traffic Patrol or Other Department Facility Office outages	1 hour	4 hours	7 calendar days

7.4 ROUTINE MAINTENANCE RESPONSIBILITIES

7.4.1 Utility Service Outage

Upon notification of power outages/utility problems, the Contractor shall dispatch a patrolman to inspect and address equipment and/or service failure, report findings on an EMCIT ticket. In cases of long-term power outages the Contractor shall be required to provide a generator, under routine maintenance, to power the lights as requested by the Engineer.

7.4.2 Controller/Cabinet

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.

Log Sheets

The Contractor shall maintain service log sheets in each lighting cabinet. New log sheets for 2016 shall be placed in the cabinet (in protective plastic) in January 2016 and the logs from years 2013 and 2014 shall be removed and submitted to the Engineer at the January 2016 System meeting.

After responding to a lighting controller/cabinet trouble call the patrolman must record the problem found and action taken for service restoration on the cabinet log sheet in addition to calling in the information for the Ticket.

Cabinet Components

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. All replacement work requires a Ticket and spare parts disposition log for the new equipment.

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.

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.

The Contractor shall repair as necessary, lighting cabinet doors, hinges, meter box, etc., to keep the cabinet functioning effectively.

Radio

When the Contractor removes a lighting cabinet radio for repair, it must be immediately replaced with a spare radio from the Contractor's owned, spare parts stock. The Contractor is required to have two (2) working, SCADA radios available 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 repair and a Contract Spare Parts Disposition Log shall be used for the equipment exchange.

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 Contactor shall report all work on a ticket.

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 the 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 an identical replacement.

State of Illinois Decal

If the cabinet "State of Illinois" decal/sign (as approved by the Engineer) is found to be missing or damaged, the Contractor shall immediately apply an identical replacement.

7.4.3 Light Pole Unit

All light poles, standard, davit, round-tapered, conventional, combination, or decorative/painted shall conform with approved submittal requirements, but may be from a different manufacturer than the originally installed light pole, and shall meet UL requirements.

Standard or davit light pole mast arms shall be replaced with the same color, length, rise, diameter, and shape as the original installation. The davit arm shall be horizontal to the X-axis and 90 degrees to the shaft.

All resets of light poles shall use a short transformer base (T-base). The Contractor shall not use a breakaway coupling.

If the existing ground tap/lug is damaged or not functional, the pole shall be drilled and the ground wire lugged on and not wrapped.

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).

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 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. Refer to Department standards.

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.

7.4.5 Light Tower

If a motorist causes structural damage to a light tower or the Contractor or Department inspectors determine that a tower is unsafe for the motoring public, the Engineer shall be immediately notified in order to approve the immediate removal of the light tower.

The Contractor shall be paid for work through Non-Routine Maintenance Unit Prices for:

- Light Tower (Remove and Re-Erect)
- New Foundation (if required, removal and replacement)
- Temporary Lighting (installation and removal)
- Furnish Replacement Light Tower, if not available in Contract Spare Parts Inventory

The Contractor shall be paid for work through Non-Routine Maintenance Agreed Prices for:

- Handling of contaminated soil (if found)
- Clearing Site for Safety

The Department reserves the right to use Contract Spare Parts for all material replacements as necessary.

The Contractor shall install temporary lighting to restore lighting service and shall provide the Engineer catalog material cuts for the tower replacement for approval within ten (10) days of the light tower removal. After receiving the Engineer's approval of the catalog cuts, and a non-routine authorization for tower work, the Contractor shall order the material and complete the reinstallation of the light tower within a three (3) month period.

If a light tower block retaining wall and adjacent concrete pad are found to be damaged, they shall be promptly repaired.

The Contractor shall maintain, in proper working order, all external portable drive units in the Contract Spare Parts Inventory, which are used to lower the towers which do not have an internal drive.

When performing tower work and/or inspection that require lowering the ring, the Contractor shall relamp and clean the inside and outside all luminaires. Also review preventive maintenance light tower inspections in Article 7.5.10.

Lane Closure Requirement

There is barrier wall adjacent to the light tower foundations on I-290 (Eisenhower Expressway) near Wolf Road, I-90/94 Ryan Expressway at Maxwell St, I-80/90 Kingery Expressway and I-394. In order to perform routine maintenance inspections and outage repairs on these towers a lane closure is required, as are attenuators and a bucket truck.

7.4.6 Luminaires

Certain requirements apply when lighting units are replaced or repaired in place under routine maintenance. Luminaire ballasts shall match the system voltage and be of the same type and characteristic as the original design and installation being replaced, unless otherwise authorized by the Engineer.

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 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, except as otherwise indicated or authorized 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.

Lamp

When a replacement luminaire is installed, it shall be equipped with a new lamp. The Contractor shall also provide a new lamp, through routine maintenance, if a non-routine authorization letter requires a replacement luminaire from the Contract Spare Parts Inventory. The HPS lamp shall be rated for a minimum of 80,000 hours; Sylvania LUMALUX PLUS XL ECO non-cycling or better, as approved by the Engineer.

LED

The replacement fixture and/or any components shall be of the same kind as originally installed and approved by the Engineer to match the photometric.

Fuse and Fuse Kit

Standard fuse holders shall be used on non-frangible (non-breakaway) light pole installations and quick-disconnect fuse holders shall be used on frangible (breakaway) light pole installations. Wires shall be carefully stripped only as far as needed for connection to the device. Over-stripping shall be avoided. An oxide inhibiting lubricant shall be applied to the wire for minimum connection resistance before the terminals are crimped-on. Crimping shall be performed in accordance with the fuse holder manufacturer's recommendations. The exposed metal connecting portion of the assembly shall be taped with two half-lapped wraps of electrical tape and then covered by the specified insulating boot. The fuse holder shall be installed such that the fuse side is connected to the pole wire (load side) and the receptacle side of the holder is connected to the line side."

Shields (Light Towers or Light Pole Luminaires)

The luminaire shield, if found to be torn or ineffective, or missing, 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.

7.4.7 Cable

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.

When cable deficiencies become suspected or known, the Contractor shall take immediate corrective action to make temporary repairs.

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.

When temporary cable is installed, all splices shall be as good as splices for permanent repairs and proper grounding shall be observed. Permanent repairs shall follow as soon as possible and shall be completed within 21 calendar days.

Temporary ground laid cable or attachment to the metal structures is not allowed.

Aerial Cable

The Department only allows aerial cable to be used for temporary repairs and the Engineer shall give prior approval of all Contractor installations of aerial cable. If aerial cable is approved it shall be installed so that its lowest point is at least twenty-five (25) feet above ground level.

The Contractor shall document on tickets all cases where temporary aerial cable was found installed.

Allowable Cable Permanent Repair Delays

From December 1st to May 1st, when permanent cable repairs are not possible due to frozen ground, the Contractor is allowed to keep the tickets open and wait until May to complete the permanent work.

In all cases where temporary repairs are made during the winter months, permanent repairs shall be completed by May 31st.

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 or PVC Schedule 80 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 the 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.

7.4.8 Decal Replacement

The Contractor shall keep an Excel spreadsheet of reported or observed locations where , light pole, underpass, sign, camera, and light tower identification decals, or accident reference (mile marker) decals are worn-out, missing, damaged, covered up or placed

so they are illegible to police and emergency personnel. The Damaged Decal list, sorted by decal type, shall be transmitted monthly in the routine work submittal.

Light poles that are damaged and replaced due to motorist caused damage shall have new decals, including accident reference numbers, replaced by the Contractor at the time of the repair, if weather is suitable. Those decals which were not replaced shall have their location and pole/unit number entered on the Damaged Decal List.

The Department shall review the damaged decal list and shall provide a list of the locations and equipment to be re-decaled once or twice a year.

7.4.9 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. The Contractor shall replace the disconnect switch if it is rusted and/or inoperable to isolate sign lighting fixtures. The sign lighting fixtures and associated conduit, wiring, and disconnect shall be removed if a new reflective sign board for night visibility is installed by the Department.

7.4.10 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 sunset 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 and qualified Contractor personnel shall be allowed to operate the lighting SCADA system.

7.4.11 Grounds Maintenance

The Contractor shall keep a 10-ft area surrounding the controller/cabinet, all towers, and at facility/building locations as requested by the Engineer, clear of all vegetation, bushes and trees. Refer to Grounds Maintenance in Article 4.0.

7.4.12 Outages

The Contractor shall provide the labor, equipment and material to meet the response requirements for all outages and repairs and this work shall be included as part of

routine maintenance. The Contractor shall wash all the luminaires on the tower, pole, underpass, navigation, tube lighting or sign lighting during an outage repair. Refer to Article 4.0 to review outage documentation requirements.

7.4.13 Specific Electrical Equipment

The Contractor shall maintain under routine maintenance the following:

General Items

- Cables
- Calcium chloride pump connect/dis-connect service
- Conduits
- Control boxes
- Controllers
- Emergency exit lighting and signs
- Fittings
- GFCI outlets, indoor and outdoor
- Junction boxes
- Light poles, aluminum or wood
- Light towers
- Lighting fixtures, indoor and outdoor and control equipment
- Main distribution panel and sub-panels
- Motion sensors
- Outlets
- Power controls
- Roof and ceiling fixtures
- Salt dome and cold storage lighting
- Switches
- Wall packs (outdoor)
- Wiring and associated equipment

In addition to the above equipment, the Contractor shall respond, under routine maintenance, to all problem calls and shall troubleshoot to determine the malfunction of the following special use equipment but not limited to:

Special Use Items

- Air compressors
- Calcium chloride and brine spray pumps
- Conveyor for salt dome
- Exhaust fans
- Garage door openers
- Hot asphalt box
- HVAC systems
- Lift motors/hoist system,
- Motors and pumps for asphalt heating tanks
- Ovens at Material Labs

- Pressure washer pumps
- Test equipment
- Wastewater lift stations pumps
- Welders
- Any other electromechanical equipment

The routine maintenance for this equipment includes response and investigation of trouble calls/tickets, deficiencies and malfunctions, making the equipment safe for use, and installation of new materials less than $ 500 each in value to replace defective or non-functioning items. All labor and equipment necessary for transportation, removal and re-installation of the materials (under $ 500), plus shipping, mailing, and handling charges are also paid through routine maintenance.

The Contractor shall respond, troubleshoot, and make required minor repairs to provide operable calcium chloride pumps or wastewater lift station pumps; however, the Contractor will not be responsible to purchase new pumps.

When the Contractor determines the new materials will cost over $ 500 the Contractor shall make the situation safe, and fully explain the replacement work required on the ticket. The Contractor shall automatically provide the Engineer a quote for the replacement materials and installation, but shall not proceed with the work unless approval is given by the Engineer.

The Department may purchase the replacement materials on this Contract or from other sources, for the Contractor to install through non-routine maintenance pay items. Review Non-Routine Pay Items in Section 2 herein.

Moveable Bridge Controls

The Contractor shall respond to all problem calls/tickets and shall troubleshoot to determine the malfunction of the bridge controls. The first eight labor hours (for troubleshooting or repairs) shall be covered under routine maintenance.

The Contractor shall notify the Engineer to get approval of additional labor hours (over eight) needed to complete the work for each bridge control malfunction problem call/ticket, to be paid through non-routine maintenance pay items. The problem and replacement work required shall be explained on the ticket.

Routine maintenance also includes the removal and re-installation of new materials less than $500 each in value to replace defective or non-functioning items and the labor and equipment necessary for transportation, shipping, mailing, and handling charges.

When the Contractor determines the new materials will cost over $ 500 the Contractor shall automatically provide the Engineer a quote for the replacement materials and installation, but shall not proceed with the work unless approval is given by the Engineer. The Department may purchase the replacement materials, on this Contract or from other

sources, for the Contractor to install through non-routine maintenance pay items. Review Non-Routine Pay Items in Section 2 herein.

7.5 PREVENTIVE MAINTENANCE PROGRAMS

7.5.1 General Information

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.

Schedules for start and completion of PM program work are important for the effectiveness of the overall system reliability. All PM work shall be completed per the chart as listed below, unless extensions are approved by the Engineer. All PM program work shall be scheduled on the Daily Agenda for each location, and which shall list the specific type of inspection being performed.

The Contractor shall email the Engineer, in pdf format, the spreadsheet reports from daily preventive maintenance program work (as soon as possible, but within 24 hours). Any follow-up work required shall be noted with the applicable Ticket number.

The Contractor shall also transmit in the monthly routine work submittal in a searchable format:

- Spreadsheets for each PM program which list the EMCMS/EMCIT location number, address, cabinet or unit number, date of completion for each program and inspection, and ticket numbers (identify open and closed)

- Proposed schedule for the following month's PM programs

Art. No.	Program	No. of Locations	Frequency
7.5.2	Daytime Tunnel Lighting Inspection	12	Monthly
7.5.3	Daytime Weigh Station Inspections	12	Monthly
7.5.4	Moveable Bridge CCTV Inspection	6	Monthly
7.5.5	Maintenance Yard/Sign Shop/Facility Inspection/Pump Service	36	Mid Apr-May & Mid Sep-Oct
7.5.6	Lighting Clock Inspection	All	March & Nov
7.5.7	Clock Battery (yearly) and SCADA Battery Replacement (2017 only)	1/3 of All Loc.	Sept-Nov.
7.5.8	Control Cabinet Full Inspection	1/3 All Loc.	15/month
7.5.9	Poles & Underpasses Inspection	1/3 All Loc.	15/month
7.5.10	Light Tower Safety Inspection	550	50/month
7.5.11	Navigation Lighting Inspection	All	June
7.5.12	Maintenance Yard & Facility Wash & Relamp	9	Complete by Mid-Oct
7.5.13	Yearly Photo-Cell Calibration	1	June 21st

7.5.2 Monthly Daytime Tunnel Lighting Inspections

The Contractor shall provide Lighting System personnel, to inspect monthly 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 scheduled inspection date for each location shall be listed on the Daily Agenda.

The Contractor shall call-in all lighting outages and other deficiencies to the Dispatch Center for ticket entry. Outage repairs for all tunnels are to be completed within seven (7) calendar days of the monthly daytime inspection.

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. # L1315 I 290 @ Lower Wacker Exit Ramp

Loc. #L 1320 I 290 @ Lower Wacker Entrance Ramp

Loc. # L1325 I-290 @ Canal St. (under Post Office)

Loc. # L1713 US 34 (Ogden Ave) @ 26th Street

7.5.3 Monthly Daytime Weigh Station Inspections

The scheduled inspection date for each monthly daytime weigh station location shall be listed on the Daily Agenda.

The Contractor shall provide Lighting System personnel, to inspect monthly each weigh station installation as follows:

- 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
- Create ticket for loop resealing if required
- Check proper operation of the CCTV System and monitors filing washer fluid for proper camera operation. The wiper system on the cameras at the WS80OB Weigh Station, I-80 outbound, west of 80th Ave, require refilling.

Sign Re-Lamp – March of Each Year

The Contractor shall relamp all OPEN/CLOSED signs during the month of March, under routine maintenance. The scheduled relamp date for each location shall be listed on the Daily Agenda.

A spreadsheet shall be created with the date of relamp, location name, address, number of fixtures and number of lamps and transmitted in the monthly routine work submittal.

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry.

7.5.4 Monthly Moveable Bridge CCTV Inspection

The Contractor 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 (hard) copy of the monthly inspection, and the Contractor shall transmit a copy to the Engineer in the monthly routine submittal book. The scheduled inspection date for each location shall be listed on the Daily Agenda.

7.5.5 Twice Yearly Maintenance yard/Sign Shop/Facility Electrical Equipment Inspection/Pump Service

The Contractor shall inspect the IDOT Maintenance Yards/ Sign Shops/Facility offices 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, GFIC outlets, salt dome storage lighting, and proper electrical operations of lift motors and pumps, asphalt heating tanks, calcium chloride spray pumps its controllers, electrical equipment, pressure washer pumps, exhaust fans, and other items as listed in the Special Use equipment Article 7.4.13.

The scheduled inspection date for each location shall be listed on the Daily Agenda.

Contractor personnel shall check-in with the IDOT Maintenance Yard Technician before starting the inspection. The IDOT Technician may direct the Contractor personnel to electrical items which need attention.

During the spring inspection the Contractor shall disconnect the calcium chloride and/or brine pumps, drain fluids, clean and lubricate. During the October inspection the calcium chloride and/or brine pumps shall be re-connected, lubricated and checked for proper electrical and mechanical operation.

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry.

Service Entrance and Feeder Panel Inspection

The Contractor shall divide the Maintenance Yard, Sign Shop, and other Department Facility locations into two (2) Groups, A and B. The Service Entrance and Feeder Panel

Inspection shall be conducted at Group A locations in mid-April to mid-May and Group B locations in mid-September to mid-October.

The scheduled inspection date for each location shall be listed on the Daily Agenda.

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

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry.

7.5.6 Lighting Clock Inspection

The Contractor shall verify and adjust the time clocks twice per year at daylight savings time in March and November to assure proper operation. The scheduled inspection date for each location shall be listed on the Daily Agenda.

7.5.7 Yearly Battery Replacement

The Contractor shall replace the back-up battery for clocks once per year in September through November and check the radio code and turn-on/turn-off timing, adjusting as necessary.

Also in the September through November period of 2017 (if this Contract is renewed) the Contractor shall replace the SCADA backup battery for the radio, and 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 and EMC Dispatch Center. The Contractor shall submit catalog cuts of the replacement battery packs for Engineer approval, prior to installation.

A spreadsheet shall be kept with the replacement date, location number, address, clock and/or radio manufacturer name, old battery model and serial number, and new battery model and serial number. The Contractor is also required to put a sticker on the clock and radio indicating the date of installation for the new back-up battery.

The Contractor shall transmit in the monthly routine work submittal the spreadsheet for work completed in the prior month, and shall submit a cumulative yearly work spreadsheet in December.

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry.

The scheduled inspection date for each location shall be listed on the Daily Agenda.

7.5.8 Yearly Control Cabinet Full Inspection

(One Third of Lighting System Locations per Year)

The Contractor shall divide the Lighting System locations into three (3) Groups by Highway and/or adjacent areas, Group A, Group B, and Group C. The scheduled inspections shall start with Group A in 2016, and if this contract is renewed, Group B in 2017 and Group C in 2018. The scheduled inspection date for each location shall be listed on the Daily Agenda.

The Contractor shall verify all luminaires are operating before making test measurements. All outages shall be repaired prior to starting the cabinet inspection or the Contractor shall not conduct the inspection.

A minimum of 15 lighting system locations shall be inspected monthly and all work shall be completed by the end of November each year. The Contractor and Engineer shall discuss the findings at the monthly System meeting.

The following information shall be collected and entered on an Excel spreadsheet for each location:

- Location number and address
- GPS of Cabinet
- Driving directions to locate the cabinet
- CE meter number
- CE supply voltage
- Transformer size
- Transformer number
- Conduit and cable types

Perform an Inspection:

- Identify any objectionable current flow from one ground connection to another (which occurs from multiple grounds on the same system equipment)
- Identify highly unbalanced loads
- Measure ground resistance
- Perform continuity test for all circuits
- Visually check SCADA CPU inputs/outputs for proper operation
- Check SCADA radio communications to and from cabinet
- Confirm calibration of analog input values
- Measure the current and voltage inputs by 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 call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry. If serious damage is found or other major problems found the Contractor shall attach photos to the tickets.

The Contractor shall transmit the spreadsheet forms for the inspection work completed in the prior month in the monthly routine work submittal. A cumulative spreadsheet of the year's work with all the completed monthly spreadsheets shall be submitted in December. (The spreadsheet format shall be submitted to the Contractor by the Engineer.)

7.5.9 Yearly Light Pole and Underpass Safety Inspection

(1/3 of light poles and underpasses per year)

The Contractor shall divide the Lighting System locations into three (3) Groups by Highway and/or adjacent areas, Group A, Group B, and Group C. The scheduled inspections shall start with Group A in 2016, and if this contract is renewed, Group B in 2017 and Group C in 2018.

A minimum of 15 lighting system locations shall be inspected monthly and all work shall be completed by the end of November each year. The scheduled inspection date for each location shall be listed on the Daily Agenda.

The Contractor shall conduct a safety inspection of the light poles and underpass lighting by physically walking the entire power center. The Contractor shall insure that all lighting components are maintained in a safe and effective operating condition as originally designed or as subsequently modified by the Department.

The Contractor and Engineer shall discuss the findings at the monthly System meeting.

Inspection

Check for damage to the following:

- Poles and Mast Arms (check for cracks, loose nuts and bolts)
- Underpass fixtures
- T-base
- Luminaires
- Luminaire keeper
- Shields
- Luminaire keeper
- Shroud or Skirts (lift and check for loose and/or worn nuts and washers)
- Handhole doors
- Hardware
- Junction boxes
- Wiring conduit hangers
- Decals, missing, damaged, or illegible
- Decal mounting brackets
- Mile markers

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry. If serious damage is found or other major problems found the Contractor shall attach photos to the tickets.

Survey

The following information shall be collected for each location, entered on a spreadsheet and transmitted monthly in the routine maintenance submittal. The Contractor and Engineer shall discuss the findings at the monthly System meeting.

The Contractor shall identify by location and pole number/underpass fixture number:

1. GPS readings as specified in Article 4.17.7

2. Light pole bases which are too high and do not conform with the current approved height limitations for base extensions above the adjacent grade

3. Light poles leaning (more than 10 degrees)

4. Light poles - davit poles with open mast arm (not parallel to ground)

5. Mast arms fastened with riv-nuts

6. Lighting locations with temporary aerial cable

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry.

All equipment and materials required for repairs and replacements shall be furnished as part of routine maintenance.

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.

7.5.10 Yearly Light Tower Safety Inspection

The Engineer shall provide the Contractor a list of 550 towers to be inspected, and luminaires relamped (approximately 2350 luminaires) and washed by the Contractor in 2016, and if this Contract is renewed, 550 towers in year 2017 and in 2018. The Contractor shall insure that all light tower components are maintained in a safe and effective operating condition as originally designed or as subsequently modified by the Department. The Contractor shall provide access and traffic control as necessary through routine maintenance.

The Contractor shall provide trained, skilled, qualified personnel with a certification in Inspection and Maintenance of Ancillary Highway Structures to perform the inspections. A Professional Engineer or Structural Engineer is not required to conduct the inspections.

A minimum of 50 lighting system locations shall be inspected monthly and all work shall be completed by the end of November each year. The Contractor and Engineer shall discuss the findings at the monthly System meeting.

The scheduled inspection date for each location shall be listed on the Daily Agenda.

The Contractor shall examine for deterioration:

- Paint
- Metal parts (for corrosion and/or rust)
- Foundation
- Mounting bolts (tightened as necessary)
- Shaft
- Handhole doors and gasket
- Lowering device including motor and cables
- Ring assembly electrical cable (check for faulty splices)
- Fuse kits
- ESCO stainless steel swage sockets for cracks
- Retaining wall
- Decals and decal mounting brackets
- Cracks as found located in the first ten (10) feet shall be clearly identified and documented with pictures and measurements entered in the ticket information and sent to the Engineer.

Rust Inspection (routine maintenance)

The Contractor shall inspect rust on the 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 the ground shall be cleaned and touched up with primer and painted.

Survey

The Contractor shall identify by location, address, and tower number:

- Number of towers and number of lamps per tower
- GPS readings of the location of each light tower per specifications as provided in Article 4.17.7
- Towers with CCTV

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry. If serious damage is found or other major problems found the Contractor shall attach photos to the tickets.

The Contractor shall transmit in the monthly routine work submittal the spreadsheet for work completed in the prior month, and shall submit cumulative yearly work spreadsheets in December. The Engineer shall provide the format for the spreadsheets at the Pre-Construction Meeting.

7.5.11 Yearly Navigation Lighting Inspection

The Contractor shall conduct an inspection of all 181 navigational lighting luminaires by boat once per year in June. The scheduled inspection date shall be listed on the Daily Agenda.

The Contractor shall create an EMCIT ticket for L.E.D. modules which need replacement or repair and for any other problems found which need follow-up work.

7.5.12 Yearly Maintenance Yard & Facility Wash & Relamp

As part of routine maintenance work the Contractor shall wash and relamp the lighting fixtures inside the office buildings, storage rooms, various bays, cold storage buildings, salt domes and outside lighting on roof, wall, poles and HMLT. Nine (9) maintenance yards/facilities shall be completed each year, as selected by the Engineer. The quantities for each maintenance yard/facility including the type of fixtures and lamp will be available at the Pre Bid meeting. The scheduled wash and relamp for each location shall be listed on the Daily Agenda.

In 2016
The work shall be performed at the following locations: Rodenburg, Northside, District Bridge Office, Stevenson, Alsip, Joliet, Bishop Ford, Dan Ryan and Arlington Heights Yards.

In 2017
The work shall be performed at the following locations: Edens, Northbrook, I-57, Landscape, Naperville, Oakbrook, Grayslake, Lake Zurich yard and Northside sign shop.

In 2018
The work shall be performed at the following locations: Woodstock, Birds Bridge, I-55 Yard, New Lenox Yard and Sign Shop, Kennedy, Harvey, Hillside, St. Charles and Gurnee.

All work shall be completed by mid-October of each year. The Contractor may combine this yearly program with the Maintenance Yard Electrical Equipment Inspection in mid-April to mid-May and mid-September to mid-October, Article 7.5.5 herein.

The Contractor shall call-in all problems found/repaired and other follow-up work necessary to the Dispatch Center for ticket entry.

7.5.13 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.

7.6 MATTESON FLOOD WARNING SYSTEM – SPECIAL RESPONSE ONLY

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 IDOT ComCenter or by a police agency that an incident has occurred at the location, the Contractor shall immediately dispatch personnel to the location. 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 Contractor personnel shall arrive at the relevant system location within one (1) hour 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. In addition to completing the ticket information, the Matteson Police Department shall be notified of any response and/or repairs as completed by Contractor personnel.

7.7 EQUIPMENT/LOCATIONS INCIDENTAL TO LIGHTING ROUTINE MAINTENANCE

Locations as listed below have equipment which is incidental to the routine maintenance payment of the Lighting System. System Type Equipment Codes are as follows:

- S-L Surveillance System cameras paid through/incidental to the Lighting System
- RM-L Sign Lighting Only locations paid through/incidental to the Lighting System

SURVEILLANCE CAMERAS PAID THROUGH THE LIGHTING SYSTEM

Camera Type	Loc #	Main Route	Cross Street	County	Power From	System Type Equipment	
S	BF0B	I 94 Ford	Michigan Ave	CO	Tower	MMN2	S-L 1
S	BF0D	I 94 Ford	M L King Dr	CO	Tower	MCD3	S-L 2
S	BF11	I 94 Ford	170th ST	CO	Tower	E1IJ3	S-L 3

S	BF11A	I 94 Ford	WB I 80 to NB I 94	CO	Tower	CGH1	S-L	4
S	BF11B	I 94 Ford	I 94 W of IL 394	CO	Tower	CIJ3	S-L	5
S	BF11C	I 94 Ford	S of I 80	CO	Tower	D1CD4	S-L	6
S	DR0A	I 90 94 Ryan	Polk St	CO	Tower	DCD1	S-L	7
S	DR2A	I 90 94 Ryan	Canal St	CO	Tower	Sign Y4	S-L	8
S	DR3C	I 90 94 Ryan	35th St	CO	Tower	WAB2	S-L	9
S	DR4C	I 90 94 Ryan	45th St	CO	Tower	VMN2	S-L	10
S	DR5B	I 90 94 Ryan	50th St	CO	Tower	UIJ3	S-L	11
S	DR6B	I 90 94 Ryan	58th St	CO	Tower	TGH2	S-L	12
S	DR7A	I 94 Ryan	63rd St	CO	Tower	SAB1	S-L	13
S	DR7C	I 94 Ryan	67th St	CO	Tower	R1GH2	S-L	14
S	DR8A	I 94 Ryan	72nd St	CO	Tower	RKL3	S-L	15
S	DR9A	I 94 Ryan	81St St	CO	Tower	POP3	S-L	16
S	DR9C	I 94 Ryan	86th St	CO	Tower	PEF5	S-L	17
S	DR10A	I 94 Ryan	90th St	CO	Tower	OKL3	S-L	18
S	DR11	I 94 Ryan	96th St	CO	Tower	OAB2	S-L	19
S	FS0A	I 57	Wentworth Ave	CO	Tower	AGH2	S-L	20
S	IK14D	I 290 IKE	Wolf Rd	CO	Tower	YKL1	S-L	21
S	IK14E	I 290 IKE	IL 56 Butterfield Rd	CO	Tower	ZAB3	S-L	22
S	IK28A	I 290 IKE	Schaumburg Rd	CO	Tower	MAB1	S-L	23
S	IK29	I 290 IKE	SB IL 72 Higgins Rd Exit Ramp	CO	Tower	OAB2	S-L	24
S	IK29B	I 290 IKE	Woodfield Dr	CO	Tower	OCD3	S-L	25
S	IK29D	I 290 IKE	IL 58 Golf Rd	CO	Tower	PMN1	S-L	26
S	IK30	I 290 IKE	SW Quad of I 90	CO	Tower	PUV2	S-L	27

S	IK30A	I 290 IKE	NW quad of I 90	CO	Tower	RAB4	S-L	28
S	IK30B	I 290 IKE	IL 62 Algonquin Rd	CO	Tower	RAB1	S-L	29
S	KE13	I 90 JFK	IL 171 Cumberland Ave	CO	Tower	D1AB5	S-L	30
S	KE13A	I 90 JFK	IL 171 Cumberland Ave	CO	Tower	D1AB1	S-L	31
S	KE14	I 90 JFK	East River Rd	CO	Tower	D1GH3	S-L	32
S	KE15	I 90 JFK	E of US 12 45 Mannheim Rd	CO	Pole	PCC	S-L	33
S	KI0A	I 80 94 Kingery	State Line Tower	CO	Tower	AGH9	S-L	34
S	KI0B	I 80 94 Kingery	William St	CO	Tower	AGH2	S-L	35
S	KI01	I 80 94 Kingery	Wildwood Dr	CO	Tower	BGH7	S-L	36
S	KI01A	I 80 94 Kingery	Torrence Ave	CO	Tower	BGH1	S-L	37
S	KI2	I 80 94 Kingery	Paxton Ave	CO	Tower	DCD4	S-L	38
S	IK15	I 290 IKE	St Charles Rd	DU	Tower	WAB11	S-L	39
S	IK17	I 290 IKE	IL 64 North Ave	DU	Tower	XEF1	S-L	40
S	IK18	I 290 IKE	York Rd	DU	Tower	YCD1	S-L	41
S	IK19	I 290 IKE	Grand Ave	DU	Tower	AGH1	S-L	42
S	LP1	US 41	West Park Ave	LA	Tower	LPAB2	S-L	43
S	IE25	I 80 WB	E of US 30	WI	Tower	NKL2	S-L	44
S	IE25A	I 80 EB	US 30	WI	Tower	NOR1	S-L	45
S	IE25B	I 80 WB	US 30	WI	Tower	NIJ2	S-L	46
S	IE25C	I 80 EB	W of US 30	WI	Tower	NCD3	S-L	47

S	IE26	I 80 WB	W of US 30	WI	Tower	NEF2	S-L	48
S	ST47A	SB I 55 Stev	Under Des Plaines River Bridge	WI			S-L	49
S	ST48	NB I 55 Stev	S of Des Plaines River	WI			S-L	50

SURVEILLANCE CAMERAS AT FACILITIES AND YARDS PAID THROUGH LIGHTING SYSTEM

Camera Loc # Type		Main Route	Cross Street	County		Ltg Loc #	
S	ETP1	Emer. Traffic Control Office	3501 S. Normal/Chicago	CO	FAC-ETP	S-L	1
S	BO1	Biesterfield	Bridge Office	CO	FAC-BO	S-L	2
S	DR1	Dan Ryan	Maintenance Yard	CO	MY-DR	S-L	3
S	NS1	Northside	Maintenance Yard	CO	MY-NS	S-L	4
S	ROD1	Rodenburg	Maintenance Yard	CO	MY-ROD	S-L	5

ILLUMINATED SIGNS PAID THROUGH THE LIGHTING SYSTEM*

Loc # Type		Main Route	Cross Street	County		Cab.		
L	1765	Lake Shore Dr	I-55 Ramp Sign	CO	C1E		RM-L	1
L	1767	Lake Shore Dr	35th St Cant. Sign	CO	YE		RM-	2

							L	
L	1768	Lake Shore Dr	27th St Cant. Sign	CO	YQ		RM-L	3
L	1998	IL 64 North Ave	Harvard Ave Sign	DU	D5E		RM-L	4
L	2098	US 30	IL 47 (west of) Sign	KA	K1E		RM-L	5

*The above signs have their own separate controller/cabinet.

PLANNED MAINTENANCE SURVEILLANCE CAMERAS

WILL BE PAID THROUGH LIGHTING SYSTEM

Cam Loc #	Main Route Type	Cross Street	County	Power From	
S	FN01	IL 59	I 88	CO	Tower UFEF1	S-L	1
S	FN02	IL 59	I 88	CO	Tower UFAB1	S-L	2
S	ST49	I 55	Arsenal Rd	CO	Tower TCD1	S-L	3
S	ST49A	I 55	Arsenal Rd	CO	Tower AEF1	S-L	4

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 (up to 4160V service); 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. CCTV & Lighting below shall be maintained in accordance with Article 6 and 7.

Surveillance Systems cameras as listed herein shall be maintained and paid through Pump Station locations.

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 create EMCIT routine work tickets for the storm checklist and other routine work as requested by the Engineer.

Pump Station 27 is a new station with medium voltage (4160V) equipment and is expected to come on state maintenance in late 2015. The Contractor shall use specialized services from vendors to inspect, test, and configure equipment such as solid state motor controls, vacuum circuit breakers, contactors, soft state starters, PLC automatic MTM or MM per manufacturers' recommendations. Service vendors shall be paid in accordance to Article 6.5 Agreed-Price Work by Specialty Vendors. All maintenance and operations, including labor and equipment to assist specialty vendors in the performance of their work at Pump Station 27 shall be covered through routine maintenance.

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 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)

Documentation
The Contractor shall conduct a 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.

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.

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. Contractor personnel specialized in SCADA
2. Contractor personnel specialized in PS maintenance and operation
3. Pump station maintenance and operation personnel
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 Contractor 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. The Contractor shall use his own pump equipment to de-water the wet pit.

Two log books are maintained in each pump 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, person's 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 log book
- 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. The patrolman 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 about 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 supervisor immediately to commence repairs.)
4. Notify the EMC Dispatch Center, as to status of problem, whether it was cleared or if follow-up work required 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 Emergency Coordinator 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. Enter all information found on EMCIT program ticket.
4. Submit an EMCIT checklist (spreadsheet), indicating the time each pump station was checked, to the 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 storm events the Engineer shall be immediately notified by telephone/text of all WOP incidents. In addition to the Ticket report, all WOP reports shall be sent to the Engineer by 8 a.m. the next day following a storm.

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 Emergency Coordinator.

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.

- In the event of high water levels the Contractor shall inspect, clean and dry all equipment submerged under water once the water level recedes to normal elevations.

- The Contractor shall check all equipment for proper operation.

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 EMC spare equipment. 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.

The Contractor personnel with the assigned specialized SCADA duties shall:

- On a daily basis, review the daily operations of the SCADA System. The SCADA System shall have its periodic maintenance activities/programs check and completed by SCADA specialized Contractor personnel. 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 Contractor shall complete all Tescode programming setpoint changes and remote configuration. An RTU programming disk shall be stored and updated by SCADA specialized Contractor personnel 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 Control Logix 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 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 Department's 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 respective specialized pump station Contractor Personnel directly from the pump station, when follow-up work is required. All maintenance reports shall be transmitted on a flash drive as part of the monthly submittal.

Equipment Malfunction and Repair Tracking

Malfunction and repair of Pump Station equipment shall be recorded by the Contractor on tickets and transmitted monthly to the Engineer in an excel spreadsheet on a USB flash drive. Information shall include date of failure, date of repair or replacement, reason for failure (lightning, material defect, etc.), equipment type, model, manufacturer, location and any other pertinent information as directed by the Engineer. Equipment replacement information shall include model, manufacturer, and source. Reports shall include monthly and accumulative totals.

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 USB flash drive 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 summery 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 USB flash drive.

The Contractor shall update and maintain all P.S. tables to be true and accurate. The Contractor shall submit updates for 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	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	EMC Spare Parts 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 to 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 2016	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
8.10.17	Yeoman Pump Maintenance		June 2017 & 2	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 USB flash drive using spreadsheet software, as approved by the Engineer, once every three months, in the monthly routine work submittal.

8.8.2 MONTHLY PUMP MAINTENANCE
PS # 2, 3, 4, 14, 25, 29, 32, 33, 35, 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, 24, 26, 28, 35, 46
At pump stations with automatic trash racks, the Contractor shall:

- Inspect and insure the fingers on the trash rake assemble is fully engaged through the entire length of the barscreen. The Contractor shall make the necessary adjustment for proper operation of the trash rack.
- 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,
- Lubricate chains where applicable, and grease 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, 7, 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, 9, 10, 17, 21, 23, 24, 25, 28, 29, 30, 33, 34, 35, 39, 42, 46, 47, 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, 24, 28, 34, 36, 39, 41, 42, 47, Two in EMC spare equipment,
Base Stations, Six Moveable Bridges, IDOT Schaumburg Headquarters, Traffic Systems Center, Rodenburg Maintenance Yard and 8 Communication Huts

Engine driven pumps and back-up generators in EMC spare equipment 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
- Check and note any rusting on the generator and its enclosure
- Prepare, prime, and paint rusting metal (to match existing paint)

The Generator check list, log P-10, shall be completed and transmitted to the Engineer in the routine maintenance monthly submittal. 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 ¾ (75%) 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 SPARE PARTS/EQUIPMENT INVENTORY MAINTENANCE

The Contractor shall check the EMC spare equipment 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 transmitted in the monthly routine work submittal. All items added, removed or relocated from EMC spare parts shall have the proper forms completed and submitted per Article 3.6.

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, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 47, 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, 24, 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

A 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.

8.9.5 SEMI-YEARLY SIDE VOLUTE DISCHARGE PUMP MAINTENANCE PS # 14, 32, 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, 20-30, 34, 35, 40, 41, 43, 44, 47, 48, 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

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 Contractor 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.

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 SCADA specialized Contractor personnel.

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 files shall be included with the monthly routine work submittal on a USB flash drive.

8.10.4 YEARLY WET PIT INSPECTION – ALL STATIONS

A minimum of six (6) stations are 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 and third 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 (8.0 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, clean lens and reflectors.

Each report, including photo album, shall be included with the monthly routine work submittal. The Contractor shall 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

A minimum of fifteen (15) stations are 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 is 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, and shall record silt level in the wet pit in report.

The Contractor shall create tickets for any deficiencies found on this inspection including excessive silt build up and enter the numbers on the inspection report, log P-6. Each report shall be included with the monthly routine work submittal.

8.10.6 YEARLY PUMP STATION INSPECTION AND MAINTENANCE – ALL STATIONS

A minimum of four (4) stations are 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
- Check and note any rusting on the generator and its enclosure
- Prepare, prime, and paint rusting metal (to match existing paint)

The Contractor shall 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. The stations shall be inspected in the same month in the second and third year of the Contract, if renewed.

8.10.7 YEARLY PUMP STATION ROOF INSPECTION AND MAINTENANCE – ALL STATIONS

Once per year, in July to August, the Contractor shall conduct annual roof inspections and maintenance. The Contractor shall remove all debris and conduct a roof inspection and perform preventive maintenance work including repair.as requested by the Engineer.

The Contractor shall thoroughly clean the roof surface of dirt, debris, and contaminates and shall assure proper drainage and repair 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.

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 ¼" 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).

8.10.8 YEARLY PUMP CAPACITY, MOTOR CURRENT, VOLTAGE, MOISTURE, MEGGER TEST – ALL STATIONS

A minimum of eight (8) stations are 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 shall be submitted to the Engineer on a USB flash drive as part of the monthly routine work submittal. The stations shall be re-inspected 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 USB flash drive 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, 25, 29, 33, 35

A minimum of five (5) stations are 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.

8.10.10 YEARLY SUBMERSIBLE PUMP INSPECTION
PS # 2, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 34, 36, 37, 38, 39, 40, 41, 42, 43, 44, 46, 47, 48, 51, 52

A minimum of five (5) stations are 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

A minimum of twelve (12) stations are due per month, from July through October.

The Contractor shall obtain suitable test containers from an approved lab facility. The Contractor shall 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

The Contractor shall create tickets for any deficiencies found from the lab testing and submit the lab reports to the Engineer on a USB flash drive with operating software that can utilize existing data for trending. A condition summery 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 to the Engineer via email at the end of the program.

8.10.12 YEARLY MAIN CIRCUIT BREAKER TESTING INSPECTION

PS # 4, 33 and 35 to be inspected during May of 2016, and PS # 5, 3 and 26 to be inspected during May of 2017, and PS# 2, 21 and 23 to be inspected in 2017

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, 22, 23, 24, 25, 28, 29, 30, 33, 34, 35, 39, 46, 47, 50

A 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, 7, 9, 10, 11, 12, 13, 15, 16, 18, 19, 21, 22, 23, 24 ,25, 26, 27, 28, 30, 31, 39, 41, 42, 43, 44, 46,47, 48, 50, and 52

A 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

A 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 THIS ARTICLE INTENTIONALLY LEFT BLANK

8.10.17 YEOMAN/KJI/GRUNDFOS PUMP MAINTENANCE - YEAR 2016 ONLY

PS # 5, 7, 21, 24, 27, 29, 30, 42, 48

In June 2016, the low flow Pumps at PS 5, 21, 24, 27, 29 and 30 and all PS 7, 42 and 48 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

9, 11, 15, 18, 19, 24, 28, 34, 36, 39, 41, 42, 47, Two in EMC spare equipment, Base Stations, Six Moveable Bridges, IDOT Schaumburg Headquarters, Traffic Systems Center, Rodenburg Maintenance Yard and 9 Communication Huts

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 2016
- Replace thermostats in 2016
- Replace fan belts in 2016
- 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 2016.
- Record inspection on log P-10 in the log book and submit a copy of the report with the monthly routine work submittal
- Tickets shall be created for any problems found
- Check and note any rusting on the generator and its enclosure
- Prepare, prime, and paint rusting metal (to match existing paint)

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, are found in 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-Construction 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 stations per month starting in February and all must be completed by the end of October.

PUMP STATIONS

#	CITY CFS	MAIN ROUTE #	NEAREST CROSS ST		RAILROAD	WATERWAY		GPM
1	RESERVED FOR	FUTURE USE						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 USE						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 #	INSTALL DATE	NOTE REF. NO.	STATION TYPE	SECONDARY SERVICE	PUMP CONTROL			ALARM TYPES		CAP MET	PS #
					PRIMARY	SEC(1)	TERTIARY	AEGIS	SCADA		
2	1951/72/95	3,5,8,9,23	WET PIT	2ES FAT	CL 5000	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	CL 5000	BUBBLER	PROBE	AEGIS	SCADA	YES	4
5	1965/2005	2,7,8,10,22	WET PIT	2ES SBAT	CL 5000	FLOAT		AEGIS	SCADA	YES	5
7	1955/2012	8,9	WET PIT	2ES FAT	CL 5000	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	CL 5000	FLOAT		AEGIS	SCADA	YES	10
11	1934	5,11,24,25	DRY PIT	GEN (D)	CL 5000	FLOAT		AEGIS	SCADA		11
12	1934/72	9,20	DRY PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA		12
13	1934	5,9,24,25	DRY PIT	2ES FAT	CL 5000	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	-	CL 5000	FLOAT		AEGIS	SCADA		15
16	1934	5,9,20	DRY PIT	2ES FAT(P)	CL 5000	FLOAT		AEGIS	SCADA		16
17	1931/91	3,5,9,23,24	WET PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA	YES	17
18	1942	24,25	DRY PIT	GEN (D)	CL 5000	FLOAT		AEGIS	SCADA		18
19	1948	11(P),24,25	DRY PIT	GEN (D)	CL 5000	FLOAT		AEGIS	SCADA		19
20	1958/86	5,8,9,24	WET PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA		20
21	1960	7,8,9,15,22,25	WET PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA		21
22	1970/96	2,3,5,8,12,23	WET PIT	2ES SBFAT	CL 5000	FLOAT		AEGIS	SCADA		22
23	1970/96	2,3,5,8,12,23	WET PIT	2ES SBFAT	CL 5000	FLOAT		AEGIS	SCADA	YES	23
24	1960/70/2012	3,7,8,19,22	WET PIT	2ES FAT/ GEN (D)	CL 5000	FLOAT		AEGIS	SCADA	YES	24
25	1962	3,7,9	WET PIT	2ES FAT	LIQ. V	BUBBLER	PROBES	AEGIS	SCADA	YES	25
26	1962/72/2012	2,3,7,8,19,22	WET PIT	2ES SBFAT	CL 5000	FLOATS		AEGIS	SCADA	YES	26
27	1961/2012	3,7,8,9,19,22	WET PIT	2ES FAT	CL 5000	FLOATS		AEGIS	SCADA	YES	27
28	1961	2,3,5,11,16,23	WET PIT	GEN(D)	CL 5000	FLOATS		AEGIS	SCADA	YES	28
29	1962	7,8,10	WET PIT	2ES SBAT	CL 5000	BUBBLER	PROBES	AEGIS	SCADA	YES	29
30	1963	3,5,8,9,16,22	WET PIT	2ES FAT	CL 5000	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	CL 5000	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	CL 5000	FLOATS		AEGIS	SCADA	YES	35
36	1972	1,18,23	DRY PIT	GEN(D)	CL 5000	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	CL 5000	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)	CL 5000	FLOAT		AEGIS	SCADA	YES	42
43	1936	3,5,9,15,23	DRY PIT	-	CL 5000	FLOAT		AEGIS	SCADA		43
44	1938/00	5,16,23,24	DRY PIT	2ES FAT	CL 5000	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	1955/86/2014	5,11	WET PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA		47
48	1942/2013	24,25	DRY PIT	-	CL 5000	FLOAT		AEGIS	SCADA		48
49				-							49
50	1985	3,9,23	DRY PIT	2ES FAT	CL 5000	BUBBLER	FLOAT	AEGIS	SCADA	YES	50
51	1984	3,9,23	DRY PIT	2ES FAT	CL 5000	BUBBLER	FLOAT	AEGIS	SCADA	YES	51
52	2002	16,9	WET PIT	2ES FAT	CL 5000	FLOAT		AEGIS	SCADA		52

Pumping Station Construction History & Reference Notes

1 N/A

2 PS # 4(2), 5, 21, 22, 23, 24, 26, 28, & 35(2)AND 46 HAVE AUTOMATIC TRASH RACKS

3 PS # 2, 3, 4, 5, 7, 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# 2,3,5,7,9,10,11,13,16,17,18,2021,22,23,24,26,27,28,30,31,34,35,36,39,41,42,43,44,46,47,48, 52

6 N/A

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, D=DIESEL
PS: 9(D), 11(D),15(D), 18 (D), 19, 28(D), 34(D), 36(D), 39(D), 41(D), 42(D), 48(D) AND

TWO (2) MOBILE GENERATORS 31(D), 46(D)

12 MAIN TIE MAIN SCHEME 22,23,24,26 & 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, 38, 8, 25, 4, 33

16 PUMP STATIONS UNDER CONSTRUCTION PS 7, 24, 26, 27,48

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: 24,33

20 PS12, 14 HAVE COMMON DISCHARGE

21 PS 48 HAS TWO FLYGT MP AND TWO YEOMANS INTERCHANGEABLE

22 THE FOLLOWING PUMPING STATIONS ARE UNDER IMPROVEMENT PROGRAM; 4,8,14, 25, 33, 38

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

AB.....ABS PUMP CO.
AC.....ALLIS CHALMERS
AV.....AURORA PUMP CO.
CA.....CASCADE PUMP CO.
CO.....CORNELL MFG. CO.
CP.....CHICAGO PUMP
FL.....FLYGT PUMP CO.
FM.....FAIRBANKS MORSE CO.
JP.....JOHNSTON PUMP CO.
PA.....PATTERSON
PE.....PEERLESS PUMP CO.
CY.....CLOW YEOMANS, GRUNDFOS
SC.....SCAN PUMP CO.
EB…… EBARA PUMP CO.
GF.....GRUNDFOS PUMP CO.

PUMP REBUILD HISTORY CODES

N..... NEW PUMP
R..... REBUILT PUMP
O..... ORIGINAL
RWK..... REWORK
NS..... NEW SPARE BOWL
RS..... REBUILT SPARE
J..... JUNK

PUMP TYPE CODES

VA..... VERTICAL AXIAL
S..... SUBMERSIBLE
SVD.... SIDE VOLUTE DISCHARGE
DPS..... DRY PIT SUBMERSIBLE
* ..... LOW FLOW PUMP

TABLE P-3 PUMP SPECIFICATIONS

MAIN PUMPS								LOW FLOW PUMPS							
PS	MAIN	STAND BY PUMP	PUMP	PUMP	DSC HG	MOTOR ENG	CURRENT FL	LOW FLOW		PUMP	PUMP	DSCH	MOTOR ENG	CURRENT FL	PS
NO	(QTY)	(GPM)	TYPE	SIZE	SIZE	VLT/PHASE/RPM	AMPS/HP	QTY	GPM	TYPE	SIZE	SIZE	VLT/PHASE/RPM	AMPS/HP	
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
7	3	3000	S	12	12	460/3/	60/35	1	650	S	6	6	480/3	/10	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	DPS	10	12	230/3/860	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	22000	S	24	24	480/3/585	437/310	1	6000	S	12	12	480/3/875	129/100	24
25	6	6000	VA	20	24	480/3/1175	49.5/40	1	1200	S	6	10		-/15	25
26	7	10000	S	36		480/3/1185	240/200	1	3200	S	10	10	480/3/1185	89/70	26
27	8	30000	S	48		4160/3/591	76/468	2	2500	S	8	12	460/3/1160	77/60	27
28	4	8000	S		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	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	3	2900	DPS	12	12	4800/3/870	40/30	1	250	DSP	4	4	480/3/1160	11 /7.5	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	POSITION										PS
#	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)	6/11(RS)	3/11(R)	9/05(RW)	3/94(N)	10/03 RS	3/12 (R)	4/08(R)		4
5	3/06(R)	2/12	3/06(N)	07/11(N)	02/12	1/11					5
6											6
7	2014 (N)	2014 (N))	2014 (N)	2014 (N)							7
8	6/06(R)	8/99R									8
9	04(0)	04(0)	04(0)	04(O)	*94(O)*						9
10	93(O)	93(O)	6/11	12/10	9/14(N)						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)	2/11									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	3/11	11/93(N)									19
20	4/00(N)	03/12									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)*	01/15	01/15 (R)			22
23	96(O)	96(O)	96(O)	96(O)	96(O)	96(O)	1/10 (R)	12/10			23
24	2013(O)	2013(O)	2013(O)	2013(O)	2013(O)	2013(O)	2013(O)	2013(O)	2013(O)		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	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)				26
27	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)	2012(O)	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)	3/11	8/93(N)	02/14 R	03/14 R			29
30	11/11	11/11	6/11	2/11	3/11						30
31	05/15 R	99(O)	99(O)	*7/04 (RW)*	7/04(RW)						31
32	3/08(N)	96(N)									32
33	06(N)	75(O)	2/11	6/15(RS)	6/86(RS)	1/96(N)	3/06(N)				33
34	6/10 (N)	7/04(RW)	7/11	3/10(R)							34
35	02(NS)	67(O)	05/12(N)	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)	5/15 (R)	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	2012(O)	2012(O)	2012 (O)								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		MAIN PUMPS		LOW FLOW PUMPS			OIL-TUBE			PS
#		NEW	REBUILT	NEW	REBUILT	IMPELLER	ASSEMBLY			#
1										1
2		1		1	1					2
3			1	1						3
4			1							4
5			1		1					5
6										6
7		1								7
8										8
9		1								9
10		1								10
11						1				11
12										12
13										13
14			1							14
15						1				15
16		1								16
17		1								17
18						1				18
19										19
20										20
21					1					21
22			1			1				22
23			1							23
24			1		1					24
25										25
26		1		1						26
27		1			1					27
28				1						28
29		1	2				2			29
30		1								30
31		1			1					31
32			1		1	1				32
33			1		1	2				33
34										34
35		1								35
36		1								36
37						1				37
38										38
39			1							39
40		1								40
41										41
42			1							42
43						1				43
44				1						44
45										45
46			1							46
47										47
48		1		1						48
49										49
50		1								50
51						1				51
52				1						52

PS	WP AREA	PREV.	LATEST	INSTALL	SUB	REPLACE					PS

#	(SQ FT)	DATE	DATE	DATE	CONTRACT	ROOF	COST			STATUS	#
2	684	July-02	August-11		Boice	(84)		YES	7/24/2014	OK	2
3	684	August-11	July-13		Boice	(84)		YES	7/24/2014	OK	3
4	1144	August-11	November-14		Arrow	(93)	9775	YES	7/16/2014	Fair	4
5	277	July-01	May-04						7/16/2014	OK	5
7	79		Oct-03	SLAB	CONST	NEW 2012			new	OK	7
8	88	UNK		ORIGINAL					7/24/2014	OK	8
9	826	Sept-01	Sept-13	ORIG(77)	Elgin Roofing	(06)			7/17/2014	OK	9
10	970	July-09	November-12						07-22-09	ok	10
11	159		September-07		ERC	(08)		YES	7/14/2014	OK	11
12	222	June-12	08/13		ERC	(08)		YES	7/17/2014	OK	12
13	223	June-08	June-12			(87)	2070		7/24/2014	OK	13
14	182		September-11	ORIGINAL					7/14/2014	OK	14
15	143	October-03	October-03		Acer	(90)	1395	YES	7/30/2012	OK	15
16	156	08B			Acer	(90)	1395	YES	8/1/2012	OK	16
17	88	January-88	June-11						7/12/2012	OK	17
18	212	August-00	08B		Riddiford	(97)	5,197	20yr-yes	7/14/2014	OK	18
19	200	September-07	June-08		Elgin Roofing	(05)			7/14/2014	OK	19
20	265	April-04	June-11		38630	(86)			7/16/2014	OK	20
21	787	November-10	11-13		7 K'S	(89)	8484	YES	7/23/2014	OK	21
22	478	October-01	November-11		Pinnacle	(87)	5190	YES	7/16/2014	OK	22
23	1114	Nov-11 Tunnel	September-14	ORIGINAL					7/31/2012	OK	23
24	639	August-01	October-01		CONST	NEW 2012	23,240	YES	Construction	08(P)	24
25	956	November-99	March-10	ORIGINAL					7/23/2014	OK	25
26	432	June-08	July-09		CONST	NEW 2012	21,560	20yr-yes	7/16/2014	OK	26
27	1984	January-09	January-10		CONST	NEW 2012	10,290	YES	7/23/2014	PA	27
28	1692	April-04	September-10	ORIGINAL					7/23/2014	OK	28
29	1223	August-09	August-11		Riddiford	(97)	30,443	20yr-yes	7/23/2014	OK	29
30	809	January-10	October-12	ORIGINAL	Arrow	(93)			7/23/2014	OK	30
31	738		September-11						7/23/2014	OK	31
32	280	September-07		ORIGINAL					7/17/2014	OK	32
33	1039	January-10	June-12		Riddiford	(97)	22,374	20yr-yes	7/24/2014	OK	33
34	163	Sept 01	August-12						7/17/2014	OK	34
35	2002	February-09	November - 11		Steward	3-10	8067	YES	7/30/2014	PA	35
36	573	April-04	August-11		Elgin Roofing	(05)			7/14/2014	OK	36
37	253	April-04	08B	ORIGINAL					NA	10P	37
38	198	October-88	April-04	ORIGINAL					NA	OK	38
39	436	May-04	September-13						7/21/2014	OK	39
40	1868	October-01	August-11						7/21/2014	OK	40
41	231		March-02		Acer	(90)	1854	YES	7/21/2014		41
42	144	August-00	June-12	SLAB					7/18/2012	OK	42
43	242	March-02	April-10		Acer	(90)	1395	YES	7/21/2014		43
44	204	November-08	May-11	ORIGINAL					7/17/2014	OK	44
46	793		Nov-10						7/21/2014	OK	46

47	88		Nov-88		CONST	NEW 2012		YES	new	OK	47
48	216		Aug-00		CONST	NEW 2012			New	OK	48
50	624	UNk	November-13						7/21/2014	OK	50
51	327	January-10	October-13		Stewart	4-11	patch		7/14/2014	OK	51
52	443	September-09	September-13						7/18/2014	OK	52

8.14 EQUIPMENT/LOCATIONS INCIDENTAL TO PUMP STATION ROUTINE MAINTENANCE

Locations as listed below have equipment which is incidental to the routine maintenance payment of the Pump Station. System Type Equipment Codes are as follows:

- S-P Cameras and appurtenances paid through/incidental to the Pump Station System
- L-P Lighting for Pump Stations paid through/incidental to the Pump Station System

Sys	PS Loc. #	Camera Location	Address	Co.	Equipment
P	PS05	DR0	I 90 94 RYAN @ I 290 Jct	CO	S-P (TM Camera)
P	PS05	KE0	I 90 94 JFK @ I 290 NE Quad	CO	S-P (TM Camera)
P	PS05	KE0A	I 90 94 JFK @ Jackson Blvd (south)	CO	S-P (TM Camera)
P	PS12	PS12C	IL 64 @ W of 25th St (west)	CO	S-P (TM Camera)
P	PS23	PS23C	I 90 94 JFK @ Roscoe	CO	S-P (TM Camera)
P	PS44	PS44C	IL 83 @ IL 64 (south)	DU	S-P (TM Camera)
P	PS48	PS48C	IL 56 @IL 59 (west)	DU	S-P (TM Camera)

Sys	PS #	Main Route	Cross St	Co.	Ltg. Loc.#	Type
P	PS08	US 14 NW Highway	CNW RR & SOO RR	CO	L1625-AE	L-P
P	PS12	IL 64 North Ave	25th St	CO	1798-YW	L-P
P	PS41	US 41 Skokie	IL 176	LA	2294-VO	L-P
P	PS44	IL 83 Kingery Hwy	IL 64 North Ave	DU	1994-UU	L-P
P	PS48	IL 56 Butterfield Rd	IL 59	DU	1996-UQ	L-P

PLANNED MAINTENANCE - LIGHTING FOR PUMP STATIONS

Sys	Ltg. Loc.	Main Route	Cross St	Co.	Cab	Equipment

	#					
L	1898	Wood St / Ashland	139th St	CO	CU	L-P at PS14
L	1995	IL 59	North Aurora Ave	DU	UO	L-P at PS47
L	2292	IL 60 Town Line	US 41 Skokie Hwy	LA	VI	L-P at PS39
L	2293	US 45 Lake St	IL 60 Town Line Rd	LA	VJ	L-P at PS40
L	2295	US 41 Skokie Hwy	IL 132 Grand Ave	LA	VQ	L-P at PS43
L	2296	IL 22 Half Day Rd	US 41 Skokie Hwy	LA	VU	L-P at PS50
L	2493	IL 59 Division St	IL 126 Main St	WI	HQ	L-P at PS52

ARTICLE 9.0 SURVEILLANCE SYSTEM

9.1 DESCRIPTION OF WORK

The Surveillance System consists of all buildings, huts, cabinets, equipment, devices , interconnecting cables, hardware, software, infrastructure and appurtenances which make up the Expressway REVLAC system, RACS system, Fiber Optics Infrastructure, Network Switches, Dynamic Message Sign System (DMS), Detector Cabinets, Ramp Metering, Control Cabinets, Automatic Traffic Recorders, I-NET/ATMS, Video Distribution Network, Fleet Management System, Communication Towers , Electrical services and its equipment including hand holes, conduits, wire, splice boxes, patch panels, connectors with all associated devices for a complete operational system.

9.2 ROUTINE MAINTENANCE

The Contractor shall provide labor, equipment and materials as specified herein to maintain the operation and performance of all equipment as listed herein Article 9.0 and shall be paid under routine maintenance.

A list of locations and applicable equipment groups are found in Section 3 and general contract requirements are specified in other articles herein. The Contractor shall comply with Article 4.9 Repair of Damaged or Malfunctioning System Equipment for maintenance/repair requirements of the Surveillance System.

New locations to be maintained by the Contractor will be added to the Surveillance System throughout the duration of the Contract including CCTV distribution systems, cameras, network expansion, nodal buildings and associated equipment. 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. The Contractor shall work with the construction contractor/vendor to solve any problems covered under warranty.

The equipment specified herein 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.

REVLAC Construction Contract 60T93 Coordination

The Contractor shall provide the labor and equipment to coordinate the continuing operation of the REVLAC system while the REVLAC DMS is replaced and new cameras are installed through a separate construction contract 60T93. The cost of the coordination and system access labor shall be included in the routine maintenance of the Surveillance System.

When the Contractor is notified or finds any damage and/or disruption of operations caused to the REVLAC System by the construction contractor the Engineer shall be immediately notified.

1. The Contractor shall meet with Department personnel and the Construction Contractor prior to the start of construction to define the work activities. The Construction Contractor will provide the EMC an approved project schedule and all updates, including the testing schedule for coordination of REVLAC maintenance and operations.

2. During the REVLAC drum sign construction the Electrical Maintenance Contractor shall continue to maintain the REVLAC system, including, remote control buildings, operations cameras, equipment in the ComCenter, barriers, swing gates, auxiliary signs, drum signs and other associated power and control systems (fiber, copper, or radio).

3. The Electrical Maintenance Contractor shall relinquish maintenance responsibilities to the Construction Contractor the drum signs and associated power control cabinets as required and the DMS proposed to be replaced, and PTZ cameras proposed to be removed.

4. The Electrical Maintenance Contractor shall provide access to the Construction Contractor to the REVLAC buildings and equipment during the planned installation, during fiber optic installation and terminations involving the existing Vicon matrix switcher and use of existing rack and partial video transmission cage space.

5. The Electrical Maintenance Contractor will retain maintenance responsibilities of the Video Distribution System (VDS). The construction contract 60T93 states the

Construction Contractor shall coordinate with the Electrical Maintenance Contractor during the removal of the surveillance PTZ cameras, and when the construction work may impact the VDS system.

6. The Electrical Maintenance Contractor shall provide and coordinate access to the existing the electrical panels at the remote control buildings for the purpose of upgrading service to the REVLAC DMS sites.

During construction, after the fixed position CCTV cameras and structures are installed, power for the CCTV control cabinet shall feed, temporarily, from the existing drum sign roadside control cabinet until the new DMS power control cabinets are installed and are operational. The handholes for these two cabinets shall be interconnected to support this temporary power provision and to support the incremental replacement of the drum signs with DMS and CCTV by re-routing existing PLC control signal wiring and updating PLC controls.

Keys and Locks

The Contractor shall furnish and install new locks or change tumblers (approx. 400) on Surveillance System equipment as directed by the Engineer in 2016. The lock or tumbler shall be approved by the Engineer prior to purchase. As new equipment comes on maintenance during the Contract, new locks shall be installed at these locations. If this Contract is renewed, new locks shall be furnished and installed or tumblers changed for proper maintenance or security as applicable. Refer also to Article 3.3.5.

Surveillance & DMS Asset Inventory

Contractor shall maintain an Excel database for all Surveillance/DMS field installations and keep current. The current Surveillance database is broken out by freeway and incorporate cab. #, EMCMS location #, cabinet type, service address, service type, phone circuit ID, copper cable pair, fiberoptic cable assignment, GPS coordinates, and list equipment, such as signal heads, flashers, controllers, FSK telemetry by type and function and match the field hardware to the in-house equipment for that location. The Contractor shall maintain the current inventory and record and incorporate any missing equipment or locations in the inventory and update every time there is a change in equipment, as agreed to by the Engineer.

9.3 SURVEILLANCE SYSTEM EQUIPMENT

S-1 Ramp Controls

S-2 Cabinets

S-3 Dynamic Message Signs - Expressways and Arterials

S-4 Traffic Management

a: Kennedy Expressway Reversible Lane Access Control (REVLAC)
b: Roosevelt Ramp Access Control System (RACS)
c: Homeland Security Expressway Ramp Gates

S-5 Traffic Monitoring Cameras

S-6 Building, Hut, Tower, Monopole, and System Equipment

S-7 Networks
a: Communications Network & Fiber Optic Network
b. Video Distribution Data Network

9.4 RAMP CONTROLS (S-1)

The Contractor shall maintain all ramp meter equipment located at a District 1 expressway ramp metering system Location. A ramp metering location shall consist of all equipment centrally controlled and monitored by the District 1 ATMS FSK telemetry, locally controlled by a 2070 Lite ramp metering controller, or mini FEP Linux field processor and monitored by District 1 ATMS including but not limited to the following:

S-1a: FSK Ramp metering control cabinet Type III or IV, Type D foundation, load relay, telemetry mounting frame, FSK Transmitters, FSK Receivers, telemetry power supply, and all other appurtenances

S-1b: 334 expressway ramp metering control cabinet mounted on Type I foundation, 2070 Lite controller running Siemens Tempo NTCIP (1207 & 1209) Ramp Metering Software. Ethernet manage switch, PDA, NEMA Flasher, load switches, detector input file, and all other appurtenances located or attached to the ramp meter cabinet Type 334 location

S-1c: Wet pavement sensor, controller, cabling, firmware to interface wet pavement contact closure and NTCIP interface to ATMS at 71st St. and Dan Ryan

S-1d: 334 expressway ramp metering control cabinet mounted on Type I foundation, mini FEP Linux field processor running IDOT's custom FEP software, Ethernet manage switch, PDA, NEMA Flasher, load switches, detector input file, and all other appurtenances located or attached to the ramp meter cabinet Type 334 location

Items Incidental to S-1 equipment include:

- Eight inch traffic signal head, a traffic signal post of various lengths and Type A foundation. The traffic control signal head shall consist of one (1) face and two (2) signal sections (incandescent or LED)

- Low mounted 8-inch flashing warning beacon (incandescent or LED) flasher module, and all appurtenances, mounted on a wood pole, traffic signal post and foundation, or mast arm assembly and foundation

- Induction loop either embedded in a sawed slot in the roadway pavement or embedded in the concrete pavement (pre-formed loops), magnetic detector, a loop detector sensor unit, vehicle loop detector amplifier or active channel encased in a durable housing, card rack or detector input file

- Electrical service, Communication equipment, inverter, batteries and all associated devices for a complete operational system

- The Contractor shall be responsible for the troubleshooting, in-house wiring, and the repair/replacement of all in-house (TSC) FSK tone telemetry located at the Electrical Operations Field Office/Traffic Systems Center building, and the repair/replacement of roadside control cabinets. . The telemetry equipment and device shall be inspected weekdays at 7:00 AM and shall address and repair equipment failure.

9.5 CABINETS (S-2)

Contractor shall maintain all control cabinet equipment located at a District 1 Surveillance Control Cabinet location on or off expressway location. A control cabinet location shall consist of all equipment used to transmit the raw data pulse, or monitor and collect volumes, occupancy, speed, length–based classifications and FHWA classifications collected by the ATMS or ATR systems. Surveillance control cabinets shall include but are not limited to the following:

S-2a: FSK control cabinet, pedestal or pad mounted, foundation, telemetry mounting frame, telemetry transmitters and telemetry power supply

S-2b: 334 Cabinet on Type 1 foundation, 2070 Lite controller running Siemens Tempo (1207 & 1209) ramp metering software. PDA, detector input file and all other appurtenances located in or attached to the surveillance cabinet Type 334

334 Cabinet on Type 1 foundation, mini FEP Linux field processor running IDOT's custom FEP software. PDA, detector input file and all other appurtenances located in or attached to the surveillance cabinet Type 334

S-2c: Radar Vehicle Detector, location Type III cabinet foundation, RVD pole/foundation, solar panels, solar panel pole (30') and foundation, Ethernet manage switch, and cabling between radar detector/cabinet and solar panel/cabinet

S-2d: Bluetooth detector locations, solar powered 30' pole/helix foundation, with cellular modem/junction box. Contractor will have to provide traffic control to

maintain this equipment. Refer to Art. 3.14.1 and 3.14.2 for days and hours lane closures will be allowed.

S-2e: Bluetooth and Radar Vehicle detector locations with battery cabinet solar powered 30' pole/helix foundation, with cellular modem/junction box. Contractor will have to provide traffic control to maintain this equipment. Refer to Art. 3.14.1 and 3.14.2 for days and hours lane closures will be allowed.

S-2f: Radar vehicle detector location, 30' pole/foundation, control cabinet, power cables, serial communications, and contact closure wiring/interconnect back FSK control cabinet

S-2g: Solar powered induction loop location, solar panels, 30' pole/foundation, control cabinet, Ethernet managed switch, and loop.amplifier

S-2h: Red /Green LED display, mast arm, pole cabinet and wiring interconnect at 2 locations, S3015 and S3020 at Mannheim & I-190

S-2i: ATR site solar powered or AC powered data collection with IRD/Pat Traffic TRS Data, recorder, 20W and 40W solar panel, Solar regulator, 12 volt batteries, 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.

S-2j: Standalone radar vehicle detector location, radar vehicle detector, solar panels, battery cabinet, cabling, 30 foot aluminum street light pole, and foundation

S-2k: 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

S-2l: Wet pavement sensor, controller, cabling, firmware to interface wet pavement contact closure and NTCIP interface to ATMS at Addison and JFK

Items Incidental to equipment S-2 includes:

- Induction loop, magnetic detectors, radar vehicle detectors, bluetooth detectors along with their related amplifiers, microprocessors, access points, antennas, pole, foundation, relays, card racks, and detector input files

- The ATR (Automatic Traffic Recorder) network shall be maintained as part of the Surveillance System. The Department shall supply controllers, solar panels, batteries, solar regulators, cellular modem, and piezo materials. The Contractor shall be responsible for the loops, cabinet, foundation, and any other cabling local to the control cabinet for power and communications and labor to install/replace the deficient items through routine maintenance.

- Electrical service, Communication equipment, inverter, batteries and all associated devices for a complete operational system

9.6 DYNAMIC MESSAGE SIGNS (S-3)

The Dynamic Message Sign System consists of all devices and appurtenances which make up the DMS sign location. The DMS System is comprised of color LED, amber LED, and fiber flip disk signs located on expressways and major arterials located within District 1. The DMS System is controlled by a 360 Surveillance Cameleon system. This 360 Cameleon system should not be confused with the 360 Cameleon system used to control CCTV images as part of the District's VDS system.

The Contractor shall maintain all expressway and arterial DMS equipment located at a District 1 DMS location. A DMS location shall consist of all equipment which is utilized to display traveler information on an electronic display attached to a sign support structure, located on the interstate expressway system or arterial roadway, located in District 1, and shall include but is not limited to the following:

S-3a Four (4) Telespot, 18 inch, 3-line, line matrix, fiber flip disk displays

(It is anticipated the two Reversible DMS located at Kimball and Webster will be upgraded to NTCIP V2 20 mm DMS in the REVLAC DMS replacement contract 60T93.)

S-3b Fourteen (14) Skyline, 18 inch, 2070 w/UPS backup, walk-in amber LED displays

S-3c Three (3) Skyline, 2070 w/o UPS backup, walk-in amber LED displays

S-3d Two (2) Skyline, 18 inch, 170 controllers w/UPS backup, walk-in amber LED displays

S-3e Four (4) Skyline, 18 inch, 170 controllers w/o UPS backup, walk-in amber LED displays

S-3f Thirteen (13) Daktronics, 18 inch, full matrix, front access color LED displays.

S-3g One (1) Skyline, 18 inch, ful matrix, front access, 34 mm color LED display

S-3h Five (5) Adaptive Micro Systems (AMS), 8 inch, full matrix, front access amber LED displays.

S-3i Two (2) AMS, 10 inch, full matrix, front access amber LED displays

S-3j Seven (7) AMS, 12 inch, full matrix, front access amber LED displays

S-3k One (1) Skyline, 18 inch, full matrix, walk-in 20 mm color LED display

S-3l Four (4) Daktronics, 18 inch, full matrix, walk-in, 20 mm color LED displays

Items Incidental to equipment S-3 includes:

Expressway DMS

- Telespot 3901 and 3201 controllers, 170 controllers, 2070 Lite controllers with Skyline NTCIP 1203 V.I firmware, and Daktronics Vanguard 3000 Series controllers and Dakronics NTCIP 1203 V.2 firmware
- Type IV control cabinets and Type D foundation, fans, heaters, and breaker assembly
- 334 cabinets, Type 1 foundation, PDA, fans, heaters controllers, and all other appurtenances associated with 334 cabinets
- Sign enclosures (walk-in and front access), load centers, display drivers, display modules, power supplies, heaters, photocells, fans, temperature sensors, humidity sensors, fans, interior lighting cabling (power and communications) TVSS devices
- UPS Battery backup, 332 control cabinet, inverter, alarm status feedback, cabling, and all other appurtenances associated with UPS battery backup cabinets
- DMS sign locations which have CCTV cameras to provide sign display status, and/or have co-located CCTV equipment which gets power and communication through the DMS location, shall be considered as part of the DMS location for payment
- Electrical service, Communication equipment, inverter, batteries and all associated devices for a complete operational system

Arterial DMS

- Front access sign enclosures with IDI 1300 series controllers, firmware, display drivers, display modules, fans, heaters, power supplies, temperature sensors, humidity sensors, photocells, TVSS devices, interior lighting cabling (power and communications) and all other appurtenances associated with the sign enclosure
- Type III cabinets, Type D foundation, fans, heaters, door switches, and breaker sub- assemblies
- Wireless broadband communications including antennas, radios, modems, cabling and support structures

- DMS queue detector system solar panels, 45' pole, foundation, control cabinet, wireless contact closure radio, and yogi antenna to provide contact closure for traffic queue to activate a warning message on DMS located at 78th Pl. and Grand Ave. S22050 in Elmwood Park. Queue detection system shall be included in routine maintenance of Grand Ave DMS.

Traffic Control

The Arterial DMS structures do not have catwalks and hand rails to utilize as a work platform. All work up in the DMS sign enclosure will have to be done from a bucket truck. The Sign enclosures are front access which may require 2 men to open the front access door safely. There maybe a few locations which may require additional traffic control to perform routine work.

Traffic control is required to maintain the following Expressway DMS locations: (refer to Article 3.14.1 and 3.14.2 for days and hours lane closures will be allowed)

S5377 - DMS-08, NB Ryan @ Chicago River
Ramps from I-55 to Dan Ryan need to be partially closed for access to sign enclosure

S5052 - DMS-30, SB Ryan @ 83rd St.
Need partial ramp closure from SB 79th/83rd St. collector distributor for access to sign enclosure.

S3482 - DMS-13 - SEB JFK @ Augusta
Use reversible lanes or SEB Division entrance for access to sign enclosure

S5196 - DMS-31L and S5197 - DMS-31E, SB Ryan locals and express @ 55th St.
Use right shoulder and/or right lane to access UPS cabinets and access to sign enclosure

9.7 TRAFFIC MANAGEMENT (S-4)

9.7.1 REVLAC – Reversible Lane Access Control System – S-4a

The REVLAC System operations control access at the six entry ramps to the Kennedy Expressway Reversible Lanes 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, fiber, and microwave radio systems for communications.

The REVLAC 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.

The REVLAC and RACS systems are to be kept operational 24/7 in automatic mode or in manual mode when repairs are required. This may entail having personnel manually crank signs into position, manually crank swing gates, have sufficient personnel to both operate controls from a building if bypassing the PLC control or monitoring transition events, as well as manually cover 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.

The REVLAC communications scheme is triple redundant. The three modes of communications are fiber, microwave radio and telephone lines.

The primary communications is conducted on the fiber system, along two major highways, I-290 and I-90. If the fiber is interrupted from the IDOT ComCenter to the I-90 and I-290/IL 53 fiber cabinet the REVLAC data can be manually moved to the microwave path using the Harris MegaStar microwave radio and the Cisco 15454 ONS.

The secondary communications system is the microwave radio network from the ComCenter through the ISP repeater to Building E. The primary function of the microwave radio system is to provide reliable high-speed data transmission for REVLAC in the event of a fiber loss of connectivity between the ComCenter and Building E.

The third means of communications is currently a dial-up modem system via telephone lines. Each nodal site has four 9600-baud smart modems interconnected between the sites. Currently each modem is dedicated and programmed for speed dial to another node so in the event of multiple fiber optic path failure, the modems shall interconnect and remain connected for the duration of path loss. Future plans, effective for this Contract, include elimination of the current dial-in modems and their replacement with dedicated leased lines which will be active at all times between all locations so in case of multiple fiber cuts the leased lines will take over 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 forty-seven (47) LED signs manufactured by the National Sign and Signal Co. of Battle Creek Michigan throughout the REVLAC System. They are operated remotely and automatically controlled by the PLC.

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

Currently 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. It is expected that these signs will be replaced by dynamic full matrix signs (through construction contract) before the end of 2018.

Operations Cameras

Currently there are forty-one (41) operations cameras which provide an overview of the REVLAC operations to the dispatch operators at the IDOT Headquarters. Sixteen (16) cameras will be added (through construction contract) before the end of 2018.

9.7.2 RACS – Roosevelt Ramp Access Control System – S-4b

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.

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.

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 Daktronics. Each sign can be operated remotely, or locally.

Signs and Chevrons

There are 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 outside wall of 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 eight (8) operations cameras which provide an overview of the RACS operations to the dispatch operators at the IDOT Headquarters.

9.7.3 Expressway Ramp Gate System – S-4c

Forty-two (42) expressway ramp gates units have been installed for access control on the Kennedy and Eisenhower expressways. The ramp gates, the gate arm assembly, the actuator operating mechanism at Addison & Kennedy, bollards, cabinets, locks, traffic control cones and signs shall be maintained under routine maintenance as specified herein.

9.8 TRAFFIC MONITORING CAMERAS – S-5

The CCTV System consists of two hundred thirty (230) cameras with pan-tilt-zoom (PTZ), fixed cameras, poles, brackets, and all associated hardware and appurtenances a list of camera locations are in volume 3, maintenance of the cameras shall include maintaining and changing the titler presets within the camera, cleaning and repairs as specified herein and directed by the Engineer.

All Traffic Monitoring Cameras, regardless of location, are maintained through the Surveillance System. Refer to Section 3 for the list of Surveillance Systems camera locations.

9.9 BUILDINGS, HUTS, TOWERS, MONOPOLES AND SYSTEM EQUIPMENT – S-6

There are twenty-one (21) locations where the Contractor shall maintain buildings, huts, generators, towers and monopoles, beacon, wave guides, antennas, antenna mounts, cameras, and brackets, supports, cables and camera lowering devices. Single line diagrams and a network drawing will be provided at the Pre-bid meeting.

Refer to Section 3 for a list of locations and types of specialized equipment, all of which is owned by the State of Illinois and under the jurisdiction of the Department. Due to the

unique facilities and complexity of the systems to be maintained, the Contractor is urged to perform a site visit to the twenty-one (21) locations prior to bidding.

The Rodenburg Maintenance Yard tower/base station equipment and a back-up Department ComCenter have electrical and communications equipment maintained through the Surveillance System and also requires general maintenance as specified herein.

When structural problems are found on towers or monopoles, including the Rodenburg Maintenance Yard location, the Engineer shall be immediately notified. Structural problems or deficiencies are not the responsibility of the Contractor.

Building and Hut Maintenance

The Contractor shall maintain the building/hut, electrical systems, control system, mechanical systems, communications systems, alarm monitoring system, backup systems, emergency systems, fiber optic systems, network systems, conduit, cable, wire, and devices including all associated equipment, software, hardware and appurtenances.

Refer to Ground Maintenance in Article 4.0

Generators shall be maintained as specified in Article 8.0

The Contractor is not required to perform General Maintenance for building exterior or interior, or roofs for the Electrical Maintenance Field Office /Traffic Systems Center building or IDOT Headquarters building, however, specific items of equipment will have maintenance requirements as specified herein.

The Contractor shall provide the labor, equipment and material to wash and relamp the light fixtures inside and outside of Traffic System Center building. This work shall be performed in October. The contractor shall perform snow removal operations and salting as necessary when there is snow on the ground. The contactor shall commence snow removal and salting operation at 6:30 AM during on week days as needed and whenever a snowstorm occurs.

The Contractor shall be responsible for 24/7 emergency repairs to all components of the UPS System at the Electrical Operations Field Office/Traffic Systems Center.

Routine Maintenance includes, but is not limited to the following equipment and systems:

Building and Hut Maintenance

Interior and exterior maintenance of buildings and huts

(refer also to Site Maintenance Article 4.0)

Windows, doors, locks, fencing, gates, and roof

Lighting systems for outdoor or indoor lighting, fixtures, controls, and all equipment

Alarm systems and panels

Heat and ventilation and air-conditioning (HVAC) systems and all equipment

Fire extinguishers

Smoke and heat detectors and systems

Exit signs and emergency lighting

Power for Highway Advisory Radio (HAR)

Linak Desk with Controllers

First aid kits and eye wash stations

Antenna, antenna line, dehydrator line, and wave guides

Tower Lighting Controllers & Tower Lights

Exhaust fans

Generators (maintenance requirements in Article 8.0)

Power Command Alarm Status Indicator for Generator

UPS systems

Building and Hut Electrical Maintenance

Power Supply Systems

Control Systems

Distribution Panels

Diagnostic Board

Electrical Service Feeder Cable

Electrical Power Apparatus

Circuit Breakers

Transformers

Transfer Switches

Power Wiring

Power Strips and Surge Protectors

12 volt Batteries

Back-up Batteries

GFIC Outlets and Regular Outlets

Switches

Rectifiers

Tower Beacons

Surge Arrestors

Connections, conduit, cable, wire, and all associated devices

Battery Chargers and Inverters

Bypass Switches

Building and Hut Communications Maintenance

Communication Equipment

Modems

Radio Systems

PLC Equipment

Ethernet

Computers

Fiber Optic Cable, Panels, Connections, and Fiber Systems

Microwave Radio Systems and Communications

CCTV and Associated Equipment

Radar Traffic Detection Equipment for IL 38 Ramp

GPS Clock

9.10 COMMUNICATION NETWORKS – S-7a

9.10.1 General

The contractor shall maintain the communication networks and its infrastructure including I-NET/ATMS system, the SolarWinds Network Performance Management Network (NPM), wired and wireless devices, Fiber optics, email services, facsimile services, and the Electrical Maintenance Contract Management System (EMCMS) and Electrical Maintenance Contract Issue Tracking System (EMCIT) and Fleet Management System.

9.10.2 Communications

The Contractor shall maintain, under routine maintenance, the physical infrastructure between locations and equipment, nodal buildings, the fiber optic network and equipment including physical fiber optic and copper cabling, fiber optic cables at each node, terminations, connections, pulling pedestal, interconnect, patch panels, fusion splices, splice boxes, splice enclosures of the fiber optic interconnect cables at all remote facilities and IDOT Headquarters, raceways, enclosures, cabinets, handholes, tracer cables, cable distribution equipment & accessories, video, and data for continued operation of all systems.

Drawings showing the various nodes and the fiber optic interconnects will be made available to the prospective bidders and to the Contractor upon request.

Communication infrastructure equipment such as fiber cabinets and connections shall be incidental to the Surveillance System, including the following locations:

- I-290 West of Wolf Rd at PS 20
- IL 53 at I-90
- I-55 at King Dr
- I-55 at Lorenzo Rd
- I-55 at I-80
- I-80 at US 30
- I-80 at I-355
- I-80 at LaGrange
- I-94 SB at Dan Ryan Maintenance Yard
- I-94 Ryan at I-55 (outside AH55B) at 24th & Wallace

9.10.3 Fiber Optic Network

The Contractor shall maintain the fiber optic network which consists of fiber distribution, trunk and laterals, and 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.

Routine maintenance includes; fiber optic cables between each node, equipment, 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.

9.10.4 Shared Duct and Fiber (Tollway Fiber on IDOT Property and IDOT Fiber on Tollway Property)

Affected locations include:

- I-290 between the Nordic tower and Biesterfield Road (IDOT ROW)
- I-290 between Biesterfield and I-90 (IDOT ROW)
- I-390 Elgin O-Hare western access (Tollway ROW)
- I-355 between Army Trail Road and Nordic Road (IDOT ROW)
- I-90 from Plaza 19 to Roselle Road (Tollway ROW)

When restoring a cut cable in a fiber route the Contractor, IDOT and Illinois Tollway Authority personnel will work to restore all data traffic as quickly as possible within their right of way. Each party will be separately responsible for their equipment repair. When repairs are in progress each party shall have a representative of that party observe the repairs. Each party's maintainer shall be responsible to bill the causing party for damages.

Tollway Fiber on IDOT Property

The Tollway shall restore their equipment in accordance with their specifications and standards.

IDOT Fiber on Tollway Property

The Electrical Maintenance Contractor shall be the IDOT representative, who shall oversee the repairs and assure they are performed to the Department specifications and standards.

Wherever shared equipment is damaged the Illinois Tollway personnel shall perform the restoration of all equipment.

9.10.5 Network Maintenance

The Contractor shall maintain all network hardware, telecommunication equipment and documentation under this Contract including but not limited to SONET's, switches, routers, hubs, GigE, GBIC's, chassis, power supplies, enclosures and all associated hardware. The Contractor shall backup equipment software, configuration and maintain all licenses at all locations. This work shall be completed by July, 2016.

The Contractor shall assure continued operation of the network systems including whenever equipment is added to keep existing networks running smoothly. The Contractor shall troubleshoot and resolve problems until they are remedied. The Contractor shall advise and provide recommendations in a timely manner to the Engineer of potential conflicts with IP addresses and equipment connections.

Network equipment may require software upgrades and in the event of failure, replacement. For equipment which is no longer supported and network modifications,

the Contractor shall assure equipment added to the networks does not potentially impact the system to avoid disruption in service and assure continued operations.

9.10.6 Network Documentation

The Contractor shall update all record drawings to reflect existing network operations and submit to the Engineer by July 1, 2016. (A copy of existing networks will be provided upon request.)

The Contractor shall maintain and document all new equipment information as described below and any changes of terminations/ports of fiber and Ethernet connection at all locations. Existing network diagrams for nodes, huts, cabinets or other locations will be provided. All locations specified herein this Contract shall be updated between January 1, 2016 and December 16, 2016. The Engineer will provide an Excel spreadsheet with fiber assignments and IP addresses for the Contractor to maintain and update. The Contractor shall furnish a progress report each month in the monthly routine work submittal.

Required Updates During 1st Year of Contract:

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 Configuration File within Switch

Network Topology

Diagrams| Network Maps

Physical and Logical Diagrams

Layer 3 Networking Diagrams

All diagrams shall be on a CAD format.

9.10.7 Network Performance Management (NPM) Software

The SolarWinds software detects and diagnoses network performance issues to provide network health. It provides automated capacity forecasting, alerting and reporting with dynamic network maps, deep packet inspection and analysis.

The Contractor shall maintain the SolarWinds Network Performance Management (NPM) server and software on the IDOT District One VDS network. The Network Performance Management software, NPM, and server shall be maintained at the Electrical Maintenance Field Office/TSC building. The Contractor Dispatch Center shall also have an NPM terminal to access the IDOT VDS network. When new equipment is installed the Contractor shall update the maps on the NPM server. Refer also to Article 9.21 Warranty and Maintenance Agreements herein.

The Contractor shall assume the continued operation of NPM including the following items:

Automated Network Device Discovery

- Schedule network scans, automatically discover new devices on your network, and begin monitoring them immediately
- Ensure that your network devices are imported into the NPM monitoring database, regardless of vendor

Multi-Vendor Device Support

- Monitor performance statistics from any SNMP enabled device regardless of vendor.

Create Custom Network Mapping

- Contractor shall create custom network maps for each switch, router, and Vlan detected
- Automatically discover and display connections between devices and display on network maps.
- View the network logically by geographic location and drill into more fine views

Network Availability and Performance Monitoring

- Software shall monitor network performance indicators, such as disk space, CPU load, memory utilization, bandwidth utilization, packet loss,

latency, errors, discards, and quality of service for any SNMP-enabled devices

- Conduct detailed performance monitoring and analysis of all network elements

Centralized Message Center

- Contractor shall setup alerts based on system log and SNMP trap messages. Alerts shall be set up to alert the Engineer and staff via e-mail, network map, and mobile device.

Intelligent Network Alerting

- Contractor shall setup and define device dependencies to ensure you don't receive unnecessary alerts and prevent floods of useless messages.

- Contractor shall configure network alerts for correlated events and sustained conditions.

Customizable Performance and Availability Reports

- Contractor shall be able to create performance and availability reports using out-of-the box and community-generated templates.

Custom MIB Poller

- Contractor shall create, import, or export a custom MIB poller to monitor any SNMP-enabled device

- Collect detailed information stored in device MIB table

- Monitor virtually any statistic available on networked devices

- NPM shall include MIB support that includes a MIB database that covers the vast majority of common network devices.

The Contractor shall maintain the existing NPM Solarwind server with the following requirements:

- Dell Server PER210II 3.1 GHz processor

- 8 GB RAM
- 2 x 146GB 15k Hard Drives (RAID 1/Mirrored Settings)
- 1GBE NIC
- Windows 2008 Server R2

Contractor shall provide the Department training for up to three days and include up to 10 participants. Training shall be done at the Traffic Systems Center. Training shall include setup, customization, and optimization of the NPM software. Training shall be provided by an authorized partner of the NPM software provider.

Contractor shall supply the Department with software operational support (maintenance) for the NPM software for each contract year. Software maintenance shall include free access to any software updates, upgrades, and 24x7 support from the vendor.

The Contractor shall update all electronic record drawings when new equipment is added to reflect existing network operations, setup SNMP and any changes of terminations/ports of fiber and Ethernet connection at all locations. Existing network diagrams for nodes, huts, cabinets or other locations, and existing networks, will be provided.

The Engineer will provide an Excel spreadsheet with fiber assignments and IP addresses for the Contractor to maintain and update. The Contractor shall furnish a progress report monthly in the monthly routine work submittal for modifications and additions.

9.10.8 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, H.H, pull point, Hut, building, cabinet and equipment.

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.

In addition to fiber labeling the contractor is responsible for labelling power wiring, Ethernet, RS232 cables, blue hose 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.

9.10.9 INET/ATMS Maintenance and Support

The Contractor shall maintain the I-NET/ATMS under routine maintenance. The I-NET/ATMS is used to control ramp metering, provide travel/congestion times, manage incidents/events and manage DMS messaging. The application was developed by Parsons (Delcan Systems), Schaumburg, IL. The system details and Network Diagrams will be furnished upon request at the Pre-Bid meeting.

The routine maintenance for INET/ATMS includes preventive maintenance, monthly health check of INET/ATMS system, response, investigation and repair of trouble calls.

Vendor Technical Support under Routine Maintenance includes:

- Responding to correct and address trouble calls and questions from the Department
- Monitor System Resources and behavior
- Check processes, CPU usage, error logs, etc.
- Review of data Acquisition Equipment
- Network integration and management of new and existing field devices
- Aid and assist the Department in user and database management such as adding and deleting users, adding system detectors, DMS, changes to travel time zones, and resetting user passwords
- Reconfiguring existing hardware
- Interface issues with 3rd party software vendors
- Provide log of error messages and actions taken to remedy those situations. Also provide recommended action to be taken by Department on pending issues, which do not need immediate action, but need to be addressed before causing system interruptions.
- Upto 4 map segmentation upgrades to accommodate VDS's per year based on significant changes to the system. Configuration with in the intelligent networks Application or yearly aggregate of smaller changes.

Vendor Procedures

The Contractor and his ATMS vendor, when applicable, shall provide on-call support with a one hour response during off business hours M-F 7am to 3pm, 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 EMCIT ticket whenever problems are discovered.

2. The Contractor or the ATMS vendor shall respond within the required response time through an EMCIT ticket.

3. If the support and resolution requires less than 2 hours of the ATMS vendor's programmer's time, the TSC Engineer shall be telephoned. The required work shall be noted on the ticket and reported in the monthly report.

4. If the support and resolution requires more than 2 hours of the ATMS vendor's time and/or the resolution exceeds the 7th call of a given month, 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 EMCIT ticket number.

    b. The EMCIT 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. If there is significant work to be performed that will exceed 2 hours of the ATMS vendors time a non-routine authorization shall be issued to the vendor, via the Contractor, if deemed an emergency by the TSC Engineer. The Contractor and or vendor shall have five business days to respond to the non-routine authorization.

5. The vendor response shall include a detailed description of work required to resolve the problem or complete the improvement, and number of hours required to complete the task.

6. The TSC Engineer will review the response for approval. Work shall not continue without Engineer's approval.

7. The Contractor shall provide documentation, in the monthly routine work submittal, of vendor work time, both routine and non-routine work, and a ticket summary for the month.

8. General billing logs shall be kept to track time and resources dedicated to the problem resolution. The TSC Engineer shall be emailed all general billing logs by the close of business the following day for the previous day's activities.

The Contractor shall maintain and provide technical support per the vendor qualifications as listed in Article 9.21

9.10.10 Wired Communications

The Contractor shall have the following wired telephone and data communications lines installed and fully operable by January 1, 2016:

- One (1) high speed T-3 (10Mbps) data line (minimum) for IDOT HQ to EMC Dispatch Center for communications, EMCMS, EMCIT, Lighting and Pump Station SCADA, VDS Video, and SolarWinds terminals

- One (1) high speed T-1 (1.5Mbps) data line (minimum) for EMC Contract/Administration Office to Contractors EMCMS and EMCIT communications.

- One (1) dedicated "hot-line" (PLNC) between the EMC Dispatch Center and the IDOT ComCenter for immediate response

- A minimum of four (4) incoming voice lines to the EMC Dispatch Center available to police agencies, etc. (The Contractor shall not utilize an automated voice-answering or voice mail option for the Dispatch Center.)

- One (1) telephone lines (DID or POTS) at the EMC Dispatch Center for dial-up access to the Pump Station's AEGIS equipment

- One (1) telephone line (DID or POTS) at the EMC Dispatch Center for dial-up access to the Lighting 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

- Other telephone lines as necessary for Contractor communications, and/or other Systems as needed.

- The Contractor shall have an Ethernet connection to a high speed ISP with a minimum 50Mbs to monitor IDOT equipment.

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.

9.10.11 Wireless Communications

The Contractor shall have a tablet for each of the field personnel to receive and transmit through wi-fi for the purpose and use on EMC work. The Contractor shall have all Contractor field personnel fill out the ticket/issue response information remotely from the field while at location. The preventive maintenance programs, patrols, and other inspection forms as specified herein shall be remotely filled out and completed at assigned locations and transmitted while at location. All personal shall have access to plans, records O&M manuals and full copy of the EMC contract 62A12. The tablet shall be compatible with IDOT 3-GIS fiber management system which requires Windows OS 8.1 and EMCIT; a compatible tablet is the Surface Pro 3. The Contractor shall furnish and maintain fifteen (17) Surface pro 3 tablets with 128 GB storage 4th generation Intel core i7 or equal for use by IDOT Engineers and Techs by Jan 1st, 2016. The tablets shall come with protective cases, type cover, office 365, OneNote, latest acrobat reader multi-position kick stand, power supply adapters and shall have the capability to connect to the Kyocera Brigadier to transmit and receive data remotely.

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, personnel positions, field supervisory or management personnel, subcontractor supervisory personnel, and thirty-five (35) Department EMC supervisory field inspection personnel shall be provided units equal or better than the Kyocera Brigadier with Android 4.4 KitKat OS, as approved by the Engineer. The units shall have unlimited voice, unlimited text, seventeen with unlimited data and with activated wireless tethering capability, the largest battery available, a 16Gbit micro SD card with an 8.0 megapixel camera or better, email service, and immediate photo labeling message and transmission capability.

The thirty-five (35) units shall be provided with 12 volt car cord, 6 foot AC recharging cord, largest Lithium-Ion battery available, belt carry attachment, and twenty five (35) hands-free receivers equal or better than the Motorola Whisper, (meeting all requirements of state laws and designed for the approved model) for specified Contractor units and Department units.

As these units are used for field work, it may be necessary for the Contractor to replace up to five inspector units and receivers, and furnish additional new parts, belt clips, chargers, cords, 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. When a unit is found acceptable the Engineer shall notify the Contractor so the delivery of the new units will meet a delivery date. 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, 2015. The units shall be purchased or leased, and units delivered, ready for programming, with applicable software and cables, by December 15, 2015.

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. Also refer to Article 4.9.5 for further information regarding photo documentation of motorist caused damage and Engineer approved method of photo transmission.

9.10.12 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. Although the Department is in transition to a new database, the EMCIT, until all programs and processes are confirmed to be working as acceptable to the Department, the EMCMS shall continue for the duration of this Contract.

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 15, 2015. The EMCMS entry documentation for Patrol routes shall be completed by January 1, 2016.

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 Contactor. In addition the Contractor shall provide proper office space and access to system equipment at the approved Contractor facilities.

The Contractor 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. IDOT will be transitioning to a ticketing system EMCIT, the transition is expected to be tested and operation during the 2016 contract from the EMCMS, if the contract is renewed the contractor shall provide an equitable trade in service in lieu of the service agreement cost in the renewal year(s).

Training Requirements

The EMCMS is not a Windows based system and thus may require training for Contractor personnel use. The Contractor shall provide the Engineer evidence of EMC personnel skills on the EMCMS or shall provide vendor training for all Contractor personnel performing or supervising data entry. All training shall be complete by January 1, 2016.

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.

EMCMS Disaster Recovery:

The Contractor shall have the EMCMS vendor provide a plan for disaster recovery of a standby EMCMS servers and Sun OS/Oracle Database. The plan shall include system installation and configuration access to the IDOT EMCMS within 4 hours for a complete system recovery. All hardware, software and development will be paid under non-routine agreed price work. A testing procedure shall be part of the plan and shall be implemented tested and verified for operation. The recovery system shall be stored at TSC.

The Contractor shall provide and maintain:

For Contractor's EMC Office**:**

A minimum of three (3) shared EMCMS printers, (one a dot matrix with tractor feed) and one (1) workstation for:

- Each Electrical System Manager
- Each Administration Manager

- Each Administrative Assistant
- EMC Field Desk

For Contractor's EMC Dispatch Center**:**

- Minimum of one (1) shared EMCMS printer, and three (3) workstations

EMCMS Vendor Maintenance and Support

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 programming support 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 transmitted submitted in the monthly routine work submittal. If more programming hours is necessary they shall be paid through non-routine pay items.

User documentation, as existing, and as developed during the course of this Contract shall be provided by the vendor and given to the Engineer at the end of this Contract.

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, 2016 and ending December 31, 2016. If this Contract is renewed the warranties shall be extended to cover each renewal year. 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, 2016 (and again in January of each renewal year) pay meeting.

EMCMS Screens and Reports

The Contractor is responsible for the maintenance and data entry in the most valued program of the EMCMS, the Location Locate feature. This program provides information regarding the Department assigned location numbers, including but not limited to the following:

- addresses
- cabinet and unit numbers
- system equipment types
- maintenance status (on, off, or partial maintenance)
- patrol route assignments and schedule
- ownership
- name of current maintenance contractor
- name of construction contractor
- construction contract number
- electrical account numbers
- electrical service numbers
- directions to controller cabinets
- battery backup
- LED signals
- railroad names for inter-connected traffic signals
- railroad D.O.T. numbers
- railroad contact telephone numbers
- emergency vehicle pre-emption
- red light running camera locations,
- responsible police agency and telephone number

The Contractor will use the EMCMS for location look-up information to create the EMCIT Tickets.

The Contractor is encouraged to review the EMCMS after the Pre-Bid Meeting to view all of the EMCMS screens and reports which shall be maintained on this Contract. Further information regarding maintenance of the EMCMS programs can be obtained from the EMCMS vendor.

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.

9.10.13 Electrical Maintenance Contract Issue Track System (EMCIT)

The Department is in the process of moving to a new management system, the EMCIT, which it is anticipated shall replace the EMCMS. IssueTrak is a web-based, custom tracking application for issuing work orders, documenting response and repair, tracking inventory, and handling all service requests by the Department to the Contractor. It is the expectation of the Department that the Contractor will be motivated by the new Windows based system to monitor the work activities of the Contract and shall aid the Department in transitional work as needed.

There will be situations where a duplication of data entry is required by the Contractor on the EMCMS and the EMCIT. To minimize duplication and assure efficiency the Contractor shall also be called upon to offer suggestions on how particular programing shall be put into place and/or the development of data entry screens for the EMCIT.

In many cases the multiple requirements herein of Excel spreadsheets shall be the initial database entries for the new EMCIT. It is to the Contractor's benefit; a considerable savings of administrative personnel work, that the data collection requirements herein are completed correctly and on a timely basis so as to move onto EMCIT programming as soon as possible in 2016.

Start-Up EMCIT Requirements

The Contractor shall have in place the structure required for the EMCIT, the wireless system for desk computers, tablets, and cell units for field personnel and sub-contractors. It is the intent of the Department to have the EMC Ticket entry programming complete and ready for testing by the Contractor by December 1, 2015. This programming would also include the Cable Locate entry process and Maintenance Transfer documentation. If time dictates for the Department, the secondary round of programming prior to January 1, 2016 will be the Department work authorizations.

To assure security and integrity of the system and development to Department standards, the Contractor shall use the current maintainer J.A.Watts, Inc., (940 West Adams St., Suite 400, Chicago, IL. 60607, Telephone 312-997-3720), who has experience in programming using the existing software, and a qualified ongoing experience with hardware of the type installed. Bidders will need to contact JWI to obtain a sample contract and cost estimates of their IT support hourly charge for the EMCIT development. Only this maintainer, with prior approval of the Engineer, may perform any changes on the EMCIT system.

The Contractor shall pay through Article 109.05 Expenses Incurred by the Department, of the Standards for Road and Bridge Construction; the required two licenses for the EMCIT, IssueTrak software and the monthly fee for the hosted server (cloud based) "unlimited maintenance plus" designated product, which includes all software upgrades, major releases and unlimited technical support, and the payment to the Contractor as

provided by the Department shall be incidental to routine maintenance and shall be calculated in the bid price.

Only Department related work shall be entered on the database for EMCIT use. The Contractor is encouraged to purchase a separate license for non-Department related work.

The Contractor shall submit the resumes to the Engineer of proposed qualified personnel to work on IssueTrak. Resumes shall list previous projects and specific duties/responsibilities to demonstrate work experience related to IssueTrak.

9.10.14 Fleet Management GPS System

Scope of Work

The Contractor shall have or acquire the services of a fleet management system vendor with a Web-based application to store, view, and analyze data for all Electrical Maintenance Contractor and Sub-Contractor vehicles when personnel are performing work on this Contract. It is the desire of the Department to utilize the latest technology available to monitor the response to locations of work on the Electrical Maintenance Contract. Many of the work assignments herein are based on patrols of a particular area, or have preventive maintenance programs which require work at a particular set of locations. Thus a web-based application will aid the Department in the monitoring of Contract work response and provide the Contractor efficiency in dispatching personnel.

The fleet management program shall provide a seamless overlaying of multiple mapping and fleet data for a view of all Contractor work every day. The system shall provide a minimum of two minute reporting of GPS location, direction of travel, odometer reading and engine hours, a stop detail report and duration; a timeline of the vehicle activity by date and time, with vehicle identification, mapping (displays vehicles in real time performing Contract work), and detailed fuel usage to be viewed by an unlimited number of users.

The programming shall allow unlimited grouping hierarchy, unlimited geofences and landmarks, and have structured firewalls so all information is kept confidential and used by designated users. GPS tracking information shall be retained when the vehicle is out of cell coverage areas. The system shall be one which is capable to integrate to an Esri ArcGis GeoEvent Processor, which allows overlaying of multiple mapping. Historical data including all categories of obtained information and reporting shall be available to Department personnel for the duration of the contract.

All information shall be provided on real time 24/7, with download capabilities of scheduled work or patrols. An interface shall be accessible to all Contractor assigned personnel, Contractor Dispatch personnel and all Department Engineers and Technicians working on the Electrical Maintenance Contract.

Requirements

All vehicles shall be equipped with an in-vehicle GPS device that sends information via wireless or satellite communication to a remote data center over a secure network. The web-based application shall be accessible simultaneously to the Contractor and the Department personnel via desktop PC, handheld smartphone, or tablet. The fleet management system shall update every 90 seconds at a minimum.

The Contractor shall provide each driver/employee working on the EMC (including sub-contractors) an identification code and a key fob or equal. A driver identification reader, a GPS vehicle tracking unit, shall be installed in each vehicle for the purpose of receiving and transmitting the driver and vehicle information. All routes and work groups shall be named and programmed into the system for each of the patrolmen and crew(s) that perform assigned inspection and maintenance work.

Reporting

Patrol reports, PM program localized activity, or other established work reports with the prior day's data, (or weekly or monthly reports), shall be electronically accessible and downloadable 24X7 on excel spreadsheet using the Fleet management system and shall provide a printed copy to the Department Engineers/Technicians for viewing as requested by the Engineer.

Work Prior to January 1, 2016

The Contractor shall provide the Department a list of all personnel (including sub-contractors) who will be working on the EMC. Each name shall be assigned a unique driver identification code. The Contractor shall enter the personnel names and codes and all the necessary information for the fleet management software. All EMC locations (as found in Section 3), their GPS location (as provided by the Department) and other fixed equipment identifiers such as towers, poles, cabinets, etc. as objects/landmarks, must be entered to provide accurate reporting.

The Department shall work with the Contractor after the award of the EMC to properly set up the fleet management software so as to provide vital information for all involved. The Contractor shall grant the Department full access to the system and its development so Contract reporting requirements are met. The Contractor shall demonstrate the system use and operation by December 15th, 2015. The Contractor shall comply with appropriate Federal, State and Local laws, regulations and procedures to implement, operate and maintain the fleet management system and provide the Department access as specified herein.

Pre-Qualification Submittal

The Contractor shall submit a letter of commitment to provide a fleet management system with the pre-qualifications submittal at the Pre-bid Meeting. The fleet management system shall be in operation at the start of the Contract on January 1, 2016.

9.11 VIDEO DISTRIBUTION DATA NETWORK – S-7b

9.11.1 SONET System and Gig-E Network

The Contractor shall maintain the SONET system network which has 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. The Gig-E network is an Ethernet path which runs on the SONET system.

9.11.2 CCTV Network and Associated Equipment

The Contractor shall maintain the CCTV and associated equipment including cameras, interconnecting fiber and cable, control and switching equipment, power surge protection, 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.

9.11.3 GCM Gateway Network

This equipment/server posts a website with travel information for the Gary, Indiana; Chicago, Illinois; and Milwaukee, Wisconsin corridor area. Many travel screens are available included real time maps of congestion and construction data. Equipment to maintain includes the Cisco gigabit network, a D1 switch and D1 router, with 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; the 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 the Contractor to issue a repair Ticket. The Contractor may be notified by the IDOT ComCenter to reset the Gateway system server, or post a prepared outage message to the website. Other problems may require the Contractor to coordinate with the Engineer and visit an Illinois Tollway property to service GCM equipment.

9.11.4 AVL (Automatic Vehicle Locator) Network in ComCenter

The Contractor is not responsible for AVL server operations but may be contacted to re-boot the server at the ComCenter. The Contractor shall maintain the AVL equipment in Department vehicles. Maintenance includes responding to ETP for problems with vehicles not reporting (usually fuse and cable related) or to install, or remove and re-install units. The Contractor shall contact the IDOT ETP Manager to obtain the time

which the vehicle would be available for repair at the ETP office. The Contractor may also be contacted to re-boot the server at the ComCenter.

9.12 CONTRACTOR IMMEDIATE RESPONSE AND REPAIR

The Contractor is required to use as many personnel as necessary to respond to trouble calls within one (1) hour of notification, troubleshoot as necessary, provide temporary service restoration within four (4) hours or less and permanent repairs within forty-eight (48) hours, (unless stated in the chart below). The Contractor shall notify the Engineer of any repair work delays. Tickets are required for all maintenance items.

Due to the complexity of fiber optic work following the completion of temporary fiber optic repairs the Contractor shall agree with the Engineer as to the scope and date of permanent fiber optic repairs.

Incidents may include, but are not limited to:

- All motorist caused damage
- Camera failures
- Camera cleaning
- Malfunctions which suspend normal operations
- Fiber cable repair, fiber connections/terminations and patch panels
- Intrusion alarms
- Power outages
- Failures of network (telephone, & radio)
- Events which pose a threat to safe and timely operations

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.

Incident or Problem	**Response Time**	**Service Restoration Time**	**Permanent Repair Time**
Camera Malfunction	1 hour	4 hours	48 hours
REVLAC or RACS System Malfunction or Damage	1 hour	4 hours	4 hours
Swing or Ramp Gate Damage	1 hour	4 hours	4 hours
Ramp Metering Malfunction or Damage	1 hour	4 hours *	10 days

Cabinet Damage	1 hour	48 hours	**
DMS Malfunction or Damage	1 hour	4 hours	10 days
Loss of Expressway Travel times T1 Chassis failure/ fiber or copper comm failure	1 hour	4 hours	14 days
Repair/Replace 2070 Lite Controller- DMS	1 hour	4 hours	24 hours
Repair/Replace Ramp Meter Controller 2070 or mini FEP	1 hour	4 hours	24 hours
Cable Repairs (Temp Cable Needed)	1 hour	24 hours	21 days
Inoperable Microloop	1 hour	24 hours	14 days
Inoperable Microwave Vehicle Detector	1 hour	24 hours	14 days
Conduit Repairs	1 hour	24 hours	21 days
Inoperable Bluetooth Vehicle Detector	1 hour	72 hours	14 days
Repair/replace Induction loop lead-in cable	1 hour	24 hours	14 days
ATR site malfunction or damage	3 hours	5 days	21 days
Inoperable Loop Detector Units	1 hours	24 hours	24 hours
Malfunctioning Telemetry Power Supply, Transmitter or Receiver	1 hours	24 hours	24 hours
Beacon Light Outage	1 hour	4 hours	24 hours

*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

9.13 SPECIAL RESPONSE AREAS

9.13.1 General Requirements

The Contractor shall respond to emergency service requests and perform inspections per Engineers request 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 or Elgin, RWIS locations in District 1, the Illinois Thompson Center in Chicago, the EMC Dispatch Center, and the Illinois Tollway Authority Headquarters in Downers Grove, and other Tollway Authority Plazas throughout District 1,. The Contractor shall also respond to the IDOT Schaumburg ComCenter, Equipment Rooms, and Emergency Elevator malfunctioning HVAC units. 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.

9.13.2 University of Illinois – Circle Campus - 1140 S. Paulina St.,Chicago

Items to be maintained include:

- 3 Bosch Cameras with PTZ and mounts
- Equipment Cabinet NEMA 4X
- Comtrol Rocket Lynx Switch
- Equipment and connections
- Power Supplies
- GCM Gateway Network
- Fiber connection
- Siqura Video encoders

9.13.3 Ilinois 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:

- Microwave radio equipment, Department owned
- Backup Battery

9.13.4 RWIS Locations within District 1

The Contractor shall respond and repair problems with electrical service to the cabinets for the IDOT Regional Weather Information stations (RWIS).

9.13.5 Illinois Thompson Center (JRTC)

The Contractor shall maintain the fiber optic patch panels.

9.13.6 EMC Dispatch Center

Items to be maintained includes:

- Traffic System Conflict Monitor Alarm System
- AEGIS Alarm Equipment, EMC owned
- EMCMS and EMCAS 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 equipment, rocketport multi-serial board and cables, batteries and all other equipment and appurtenances.

9.13.7 ComCenter HVAC

Proper function of the IDOT Headquarters Schaumburg 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 shall provide, on a 24/7 basis, a qualified HVAC repair company to troubleshoot problems and provide labor, and repairs/replacements of equipment, not exceeding five-hundred ($500) dollars per call-out. The Engineer shall be notified of all problems and malfunctions, and Engineer approval is required for equipment repair work in excess of the $500, which will be paid through non-routine maintenance. The Contractor is required to have personnel to accompany any vendor working on Department equipment.

9.13.8 EMC Work at Illinois Tollway Facilities

EMC Items to be Maintained by the Contractor at Illinois Tollway Facilities:

Illinois Tollway Authority Central Administration and Plazas

- CCTV and Associated Equipment
- 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

There are specific procedures which must be followed for Illinois Tollway site access. The Contractor shall follow the official "Illinois Tollway Information Technology Procedure" (available on-line and/or at the Pre-Construction Meeting.) For all work other than emergency cases, two business day prior notice of planned work is required to schedule any site access. A Department representative must accompany the Contractor in all cases.

9.14 PREVENTIVE MAINTENANCE PROGRAMS

General Information

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. All PM work shall be completed per the chart as listed below, 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).

Following the completion of the preventive maintenance work all forms/spreadsheet shall be e-mailed to the Engineer via pdf format. Follow-up work shall be noted with the applicable Ticket number.

The Contractor shall submit in the monthly routine work submittal a searchable spreadsheet 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.

Equipment Malfunction and Repair Tracking

Malfunction and repair of Surveillance equipment shall be recorded by the Contractor on tickets and transmitted monthly to the Engineer in an excel spreadsheet on a USB flash drive. Information shall include date of failure, date of repair or replacement, reason for failure (lightning, material defect, etc.) , equipment type, model, manufacturer, location

and any other pertinent information as directed by the Engineer. Equipment replacement information shall include model, manufacturer, and source. Reports shall include monthly and accumulative totals.

REQUIRED PREVENTIVE MAINTENANCE PROGRAMS

Art. #	Program Name	# of Loc.	Completion
9.14.1	ComCenter Weekly DVD inspection	1	Weekly
9.15.1	Building and Hut Monthly Check	21	Monthly
9.15.2	REVLAC Transition Patrol	Refer to Article	Monthly
9.15.3	Battery and UPS Inspection	1	Monthly
9.15.4	Generator Inspection per 8.8.7/8.10.18	13	Monthly
9.15.5	Equipment Cleaning	22	Monthly
9.15.6	Ramp Metering Cabinet Inspection and Cleaning	122	Monthly
9.15.7	DMS Cabinet Inspection and Cleaning & Support Inspection in July only	57	Monthly
9.16.1	Remote Data Collection & Standalone Station Inspection	3	March, June, Sept. and December
9.16.2	TSC Building Roof Inspection	1	March, June, Sept. and December
9.17.1	Swing Gate Inspection	127	April and October
9.17.2	Ramp Gate Inspection	42	April and October
9.17.3	REVLAC/RACS Sign Inspection	73	April and October
9.17.4	Barrier Inspection	6	April and October
9.17.5	Cattron Inspection	10	April and October
9.18.1	Dark Fiber Inspection and Testing	Refer to Article	May to June

9.18.2	Count Station Expressway I/O Validation	5 %/Year	May, June, July
9.18.3	Tower Site Inspection	10	June
9.18.4	Fiber Spice Box Inspection	13	July
9.18.5	HVAC Inspection	39	July
9.18.6	Full Building/Hut/Systems Inspection	22	July and August
9.18.7	Battery and UPS Testing	1	August
9.18.8	Fire Extinguisher Maintenance	23	November
9.18.9	Surveillance Cabinet Inspection and Cleaning	760	January through November

9.14.1 ComCenter Weekly 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.

9.15 MONTHLY SCHEDULED PM WORK

9.15.1 Building and Hut Monthly Check

Once per month, the same week for the duration of the Contract, the Contractor shall inspect all buildings and huts (21), and Foster and Rodenburg buildings to insure proper operating condition of all equipment and to check for graffiti. The Engineer may add additional locations if 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, sweep floors
- Graffiti; if found create ticket for scheduled cleaning
- Building HVAC operations and temperature control
- Camera focus and image
- Electrical Service
- Indicator lamps; replace as required
- Modem communications
- Phone lines

9.15.2 REVLAC 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.) the Contractor 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.

9.15.3 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.

9.15.4 Generator Inspection

The Contractor shall perform monthly generator maintenance per Article 8.8.7 and 8.10.18 for all generators (13).

9.15.5 Equipment Cleaning

The Contractor shall provide monthly general interior site maintenance for equipment in building and hut locations (21), including all terminals and keyboards in the IDOT Schaumburg ComCenter, IDOT ComCenter equipment room, and TSC equipment rooms/areas, and the ISP/CMS facility (Tower radio hut with 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 Surveillance Systems equipment maintenance.

Verbal approval is needed from the ComCenter Supervisor 24 hours prior to scheduling the maintenance work. The work shall 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.

9.15.6 Monthly Ramp Metering Cabinet Inspection and Cleaning

The Contractor shall perform a complete inspection and cleaning of each Surveillance System Ramp Metering Cabinet (122 locations) once per month. The Contractor shall complete S-10 logs and transmit each month in the routine maintenance work submittal. The form will be supplied at the Pre-Bid meeting.

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 inspection includes but is not limited to:

- Record Arrival Time
- Inspect Loop Detectors
- Check 2070 lite controller for proper operation (if applicable)
- Check the mini FEP for proper operation (if applicable)
- Check radar speed warning sign and detector 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 applicable)
- 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
- Record Departure Time

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. The cleaning materials and procedures shall be approved by the Surveillance Engineer prior to starting the work.

Before leaving the surveillance installation, the Contractor shall verify the accuracy of the data with TSC personnel. The Contractor 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

The EMC Dispatch Center shall be notified to create a ticket noting problems found and/or repairs made.

9.15.7 Monthly DMS Cabinet Inspection and Cleaning

The Contractor shall inspect, check and clean the DMS cabinets (57) monthly. The Contractor perform the inspection and cleaning, inside and out, 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 Surveillance System Engineer. The Contractor shall complete S-10 logs and transmit each month in the routine maintenance work submittal. The form will be supplied at the Pre-Bid meeting. All work shall be reported on the Daily Agenda.

The inspection includes but is not limited to:

- Record arrival time
- Verify photocells operation
- Verify functioning of fans/heaters; replace or repair
- Check cabinet and meter foundation and tighten
- Check filters; replace as needed
- Inspect/test battery back up units (BBU's) where applicable
- Inspect/test PDA's where necessary
- Check operation of DMS Controller for proper operation. Verify proper operation in remote and local modes. Verify proper firmware is loaded and proper sign configurations are loaded. If necessary, load correct firmware and configuration and check with TSC personnel that the DMS is properly operating
- Inspect communications and power cables incoming and outgoing.
- Verify with TSC personnel the message correctness and lamp or LED intensities on the DMS sign. Replace lamps (as a group, not individually) or LED panels as needed.
- Check voltage levels of power supplies and battery and adjust where needed.
- Check blank-out functions, power failure, and communications failures.
- 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.
- Hand wash and clean each DMS sign enclosure, inside and/or outside
- Record departure time

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. The Contractor shall transmit the Yearly Sign Support Inspection to the Surveillance Engineer as part of July's monthly routine work submittal.

The EMC Dispatch Center shall be notified to create a ticket noting problems found and/or repairs made for the monthly inspections or the yearly support inspection. The Engineer shall be notified of any safety related issues.

9.16 QUARTERLY SCHEDULED PM WORK

9.16.1 Quarterly Remote Data Collection, Standalone Station Inspections

The Contractor shall perform a quarterly inspection of the standalone data collections sites located within District 1. There are 3 sites and all are in the S23000 location series of EMCMS location numbers for reference. The Contractor 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 Contractor 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. Data shall be submitted to the Engineer at the end of March, June, September, and December in the monthly routine work submittal.

The EMC Dispatch Center shall be notified to create a ticket noting problems found and/or repairs made.

9.16.2 TSC Building Roof Inspection

The Contractor shall thoroughly clean the roof and remove surface dirt, debris and contaminates each March, June, September, and December. The roof drains shall be unclogged, and repairs performed as specified herein. The Engineer shall be notified 24 hours in advance of the scheduled work.

9.17 SEMI-YEARLY SCHEDULED PM WORK

9.17.1 Swing Gate Inspection

Swing gate inspections (127) shall be performed twice a year, in April and October. Lubrication shall be performed once per year as a minimum. All work shall be performed in presence of an IDOT inspector. A summary of the tickets created shall be included in the applicable monthly routine work submittal.

Contractor shall:

- 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
- 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.

9.17.2 Ramp Gate Inspection

All gates installed on the entrance ramps to expressways (42) shall be operated and tested twice per year, in April and October, in presence of an IDOT inspector. In addition all gates shall be hand cleaned with biodegradable detergent and water. All work shall be performed in presence of an IDOT inspector. If any gates are found to need re-striping, the work shall be performed in the field by the Contractor, at the time of this inspection. The re-striping material (which is different from the REVLAC swing gate striping) shall be furnished by the Department, prior to the start of work. The procedure shall be to hand clean the old striping while the gate is in its closed position, and then apply the new striping over.

If any crash barrels are found damaged the IDOT ComCenter shall be notified. The Contractor is not responsible for sand crash barrel replacement. A summary of the tickets created shall be included in the applicable monthly routine work submittal.

9.17.3 REVLAC/RACS Sign Inspection

The fifteen (15) rotating drum signs shall be cleaned twice a year, in April and October. All work shall be performed in presence of an IDOT inspector. A summary of the tickets created shall be included in the applicable monthly routine work submittal.

Contractor shall:

- 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

All REVLAC and RACS auxiliary signs, dynamic message signs, Chevron signs, and LED signs (58) shall be inspected twice a year, in April and October. All work shall be performed in presence of an IDOT inspector. A summary of the tickets created shall be included in the applicable monthly routine work submittal.

Contractor shall:

- 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

9.17.4 Barrier Inspection

Barrier inspections (6) shall be conducted twice per year, in April and October. Contractor shall inspect all control cabinets, equipment access covers and hinged opening for proper closure (bolted or padlocked). All work shall be performed in presence of an IDOT inspector. A summary of the tickets created shall be included in the applicable monthly routine work submittal.

Contractor shall:

- 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 multipurpose 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

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.

9.17.5 Cattron Inspection

The Contractor shall conduct a PM program for Cattrons (10) at the Emergency Traffic Patrol (ETP) building, twice per year in April and October, to check batteries and confirm that the units link to the receiver/decoders at Buildings A/C/D/E. The units shall also be tested for battery voltage and the batteries shall be replaced as needed.

Since the units are needed daily by ETP for REVLAC operations, the PM shall be performed on a maximum of five (5) units at any one time and with maximum turn-around time of one business day, returning the units the same evening. 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.

Building and Hut Floor Cleaning

Twice per year, in April and October, and upon the request of the Engineer, when the sealed floors of the buildings and huts (21) become dirty due to winter weather or other muddy conditions the Contractor shall clean the floors with a wet mop and suitable cleaner for use with nearby electrical equipment. The TSC building floors are not included in this PM work.

9.18 YEARLY SCHEDULED PM WORK

9.18.1 Dark Fiber Inspection and Testing

For each of the 10 highways in the Communication Network the Contractor shall test a randomly chosen 10% of the “dark” fibers (fibers not in use), end to end with an OTDR at both 1310 and 1550 nm wavelengths for the length of the highway/expressway. The work shall be completed in May and June. The Engineer shall approve the Contractor’s submittal form prior to the first submittal. 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. All problems found during the inspection shall have Tickets created. The results of the traces and Ticket listing shall be submitted to the Engineer in the monthly routine work submittal.

9.18.2 Count Station/Expressway I/O Validation

The Contractor shall perform manual traffic counts at 5 percent of the Surveillance count Stations in District 1 or as directed by the Engineer in May, June & July. 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 INET/ATMS clock used to start and end the hourly data collection sequence. These hourly counts will be used to validate the calculated INET/ATMS volumes collected along the corridor.

IDOT shall analyze the collected data, compare to the calculated INET/ATMS data and issue Tickets where there are discrepancies in the I/O for upstream and down stream detector data.

9.18.3 Tower Site Inspection

The Contractor shall inspect the radio towers (10) yearly 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. Also note these requirements are applicable to the tower at the Rodenburg Maintenance Yard.

9.18.4 Fiber Splice Box Inspection

In the month of July the Contractor shall inspect the listed fiber splice boxes (13) for water and/or sand entry and document the existing sequential cable footage (slack) as it enters the vault and as it exits the vault, if the label is visible on the fiber cable. If the label is worn off or missing then the Contractor shall estimate the footage. The Contractor shall also perform this inspection upon the request of the Engineer, for a maximum of twenty-five (25) additional locations.

The following locations shall be inspected, if water or sand has entered the splice box the Contractor shall re-seal or replace it.

Expressway	Can #	Location
I-57	1	OB Median – HH1 – AIJ2 (nearest light tower)
I-57	3	OB Center Median – Cam FS1

I-57	4	OB Center Median – Cam FS1A
I-57	8	OB Center Median – HH16
I-57	18	OB Center Median – HH for Cab. I23
I-57	19	OB Center Median – HH for Cab. I25
I-57	27	OB Center Median – T11C (nearest light pole)
I-55	9	East of Harlem Ave, IB Right Shou. – Cam 23
I-55	10	East of Harlem Ave, IB Right Shou. – Cam 21
I-55	11	West of Central Ave, IB Right Shou. – Cam 32
I-55	14	East of Cicero Ave, IB Shoulder – Cam 13
I-290	10	OB Median – HH4 – Cab. 0127
I-290	11	OB Median – Cab. 0129

All repair work shall be done under routine maintenance. The Contractor shall provide necessary Traffic Control for this work. The Contractor shall provide the Engineer a spreadsheet with the inspection findings and submit in the monthly routine work submittal. All problems found during the inspection including damaged splice boxes, fiber trays and fiber cable, and/or damage to junction boxes or handholes shall have Tickets created.

9.18.5 HVAC Inspection

Once per year, during the month of July, the Contractor shall use a certified HVAC company to clean the approximate thirty-nine (39) outside HVAC coil units for the buildings and huts. This service work does not include Building B, Plato Building, or the IDOT HQ building units. The Contractor shall accompany the vendor at all facilities and shall provide the water and pressure washer necessary for this service. Special Liebert units at the Electrical Field Office/TSC require twice per year cleaning and inspection from the certified HVAC company, upon the request of the Engineer. All HVAC service reports shall be submitted in the monthly routine work submittal.

9.18.6 Full Building/Hut/Systems Inspection

A preventive maintenance program shall be conducted once per year, in July and August, for all buildings and huts, the IDOT Headquarters/ComCenter EMC maintained equipment (only), and ISP facility in Des Plaines; twenty-two (22) locations. All work shall be performed in presence of an IDOT inspector. A summary of the tickets created shall be included in the applicable monthly routine work submittal.

The Inspection shall include:

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

- Verify torque specifications of nuts/bolts
- Clean surfaces
- Check AC/DC power converter charger (if applicable)

Ethernet Network:

- Check Cisco Equipment
- 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

Modems Serial Fiber 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

CCTV**:** (not applicable for ISP/CMS facility)

Patrolmen shall inspect all equipment for cleanliness and proper operation, and check various levels and settings.

Alarms Checks on the following equipment:

- iMpath
- Optelicom
- Meridian
- Bosch
- Cisco
- IFS
- iMux

Controller for Tower Lights:

- Check and clean

PLC Servers**:**

- Check operations

DMS Signs**:**

- 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

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
- Check heaters for correct operations, note problems on tickets
- Check door operations, note problems on tickets

Roof Inspection and Repair for all Buildings and Structures (in July or August of each year)

- The Contractor shall thoroughly clean the roof surface of dirt, debris, and contaminates.

- 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 ¼" 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.

9.18.7 Battery and UPS Testing

The Contractor shall employ a factory authorized service company to perform an inspection and preventive maintenance on the UPS, its transfer switch, and its battery and the battery charger of the UPS Systems and RF transmitter at the IDOT ComCenter in Schaumburg, Hillside, and Nordic. The comprehensive inspection shall be conducted in August 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. (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.

9.18.8 Fire Extinguisher Maintenance

The Contractor shall have all fire extinguishers checked yearly for proper pressure through a fire inspection service, a minimum of once per year, in November. 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.

In some locations the dry chemical fire extinguisher (a maximum of 23 units over 3 years), will need to be submitted to the fire inspection service for hydrostatic maintenance procedures which require the extinguisher to be tested by being emptied and re-filled (every 6 years) per the NFP specifications. The Contractor shall provide a spreadsheet with the location names and dates of the yearly inspection and date of the last 6-year maintenance and submit monthly in the routine work submittal.

The Contractor shall submit the yearly report, in spreadsheet format, following the inspection, to summarize any 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.

9.18.9 Yearly Surveillance Cabinet Inspection and Cleaning

The Contractor shall perform an inspection of each surveillance expressway detector cabinet once per calendar year, seventy (70) locations per month, between January and November of each year and record on Log form S-11. The Log form S-11 sheets shall be transmitted, as completed for the month, in the routine work submittal. All work shall be noted on the Daily Agenda.

The work includes:

- Record start time
- Inspect Induction Loops
- Inspect electric service disconnect. Check Tones for proper operation
- Check 2070 lite controllers for proper operation (if applicable)
- Check the mini FEP controller for proper operation (if applicable)
- Check radar speed warning sign and detector for proper operation (if applicable)
- 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 applicable)
- Check and record voltage levels for solar powered locations on the load side of the solar regulator, battery side, and solar panel side. Take necessary action to correct any issues found.
- Inspect solar panel attachment to aluminum pole. If any issues, take necessary action to make location safe.
- Check radar, microloop, and bluetooth detector operation (if applicable).
- 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

- Clean cabinet. (The cleaning materials and procedures shall be approved by the Surveillance Engineer prior to starting the work).

Before leaving the Surveillance location, the Contractor shall call TSC and ask that the accuracy of data be checked. The Contractor 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.

9.19 Fiber Optic Cable Repairs

Under Routine Maintenance the Contractor shall troubleshoot loss of connectivity, damaged and or degraded fibers from any cause whatsoever. Upon notification of a fiber problem, the Contractor shall perform testing with power meter and OTDR to determine the source of the problem to the satisfaction of the Engineer, and shall perform repairs as specified herein.

9.20 SOFTWARE MAINTENANCE SUPPORT

For the duration of this Contract, and if renewed until December 31, 2018, 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 Surveillance 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, 2018, as incidental to routine maintenance.

Rockwell Part Number	Serial Number	Software Description	Version	IDOT Use

9357DNETL3D	1235020855	RSNetworx DeviceNet	for	4.01.00	RACS
9357DNETL3D	1235020856	RSNetworx DeviceNet	for	4.01.00	RACS
9357DNETL3D	1235020866	RSNetworx DeviceNet	for	4.01.00	RACS
9357DNETL3D	1235020854	RSNetworx DeviceNet	for	4.01.00	RACS
9357CNETL3D	1163019247	RSNetworx ControlNet	for	4.01.00	RACS
9357CNETL3D	1163019248	RSNetworx ControlNet	for	4.01.00	RACS
9357CNETL3D	1163019258	RSNetworx ControlNet	for	4.01.00	RACS
9357CNETL3D	1163019246	RSNetworx ControlNet	for	4.01.00	RACS
9324RLD300ENED	1203023898	ControlLogix RSLOGIX 5000	&	11.11.00	RACS
9324RLD300ENED	1203023899	ControlLogix RSLOGIX 5000	&	11.11.00	RACS
9324RLD300ENED	1203023897	ControlLogix RSLOGIX 5000	&	11.11.00	RACS
9324RLD300ENED	1203023909	ControlLogix RSLOGIX 5000	&	11.11.00	RACS
9324RLD300ENED	1203023859	ControlLogix RSLOGIX 5000	&	11.11.00	RACS
9701VWSCWAENE	2524000143	RSView SE Client		2.10.00	RACS
9701VWSCWAENE	2524000142	RSView SE Client		2.10.00	RACS
9701VWSCWAENE	2524000106	RSView SE Client		2.10.00	RACS

9701VWSCWAENE	2524000107	RSView SE Client	2.10.00	RACS
9701VWSCWAENE	2524000108	RSView SE Client	2.10.00	RACS
9701VWSS100AENE	2527000100	RSView SE Server 100 Display	2.10.00	RACS
9701VWSS100AENE	2527000101	RSView SE Server 100 Display	2.10.00	RACS
9701VWSTENE	2529000103	RSView Studio for RSView Enterprise	2.10.00	RACS
9355WABGWENS	1006010204	RSLinx Gateway Software	2.40.01	RACS
9324RL5300ENE	1112063372	RSLogix 5	5.20.10	REVLAC
9324RL5300ENE	1112063372	RSLogix 5 upgrade Ver. 6.0	6	RACS
9357CNETL3	1163019246	RSNetWorx Update	4.11.00	RACS
9357CNETL3	1163019247	RSNetWorx Update	4.11.00	RACS
9357CNETL3	1163019248	RSNetWorx Update	4.11.00	RACS
9357CNETL3	1163019258	RSNetWorx Update	4.11.00	RACS
9701VWSCWAENE	2524000142	RSView SE Client 3.00.01	3.00.01	RACS
9701VWSCWAENE	2524000143	RSView SE Client	3.00.01	RACS
9701VWSS100AENE	2527000100	RSView SE Server 100 display	3.00.01	RACS
9701VWSS100AENE	2527000101	RSView SE Server 100 display	3.00.01	RACS
9701VWSTENE	2529000103	RSV Studio for RSV Enterprise	3.00.01	RACS
930125E3353	1476004195	RSView32 Runtime 5k		REVLAC(

				S)
9355WABENE	1008079409	RSLinx Professional	2.41.00-ENE	REVLAC(S)
930125E3353	1476004196	RSView32 Runtime 5k		REVLAC(C)
9355WABENE	1008079415	RSLinx Professional	2.41.00-ENE	REVLAC(C)
930125E3353	1476003669	RSView32 Runtime 5k		REVLAC(A)
9355WABENE	1008084954	RSLinx Professional	2.41.00-ENE	REVLAC(A)
930125E3353	1476004198	RSView32 Runtime 5k		REVLAC(D)
9355WABENE	1008079417	RSLinx Professional	2.41.00-ENE	REVLAC(D)
930125E3353	1476004197	RSView32 Runtime 5k		REVLAC(E)
9355WABENE	1008079416	RSLinx 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

9.21 WARRANTY AND MAINTENANCE AGREEMENTS

The Contractor shall obtain a warranty and maintenance agreements for the following equipment and software, through routine maintenance, for the duration of this Contract. If this Contract is renewed the warranty and maintenance agreements shall be extended until December 31, 2018, incidental to routine maintenance. Refer to chart at the end of this Article.

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

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

A complete list of Cisco equipment will be provided at the Pre-Bid meeting.

Name: SBC or CISCO Authorized Service Vendor

Contact: Jim Patterson, 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

EMCMS Vendor Maintenance and Support

As stated in Article 9.10.12, although the Department is in transition to the EMCIT a maintainer is still required for the EMCMS. 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.

Electrical Maintenance Contract Issue Track System Maintenance and Support

As stated in Article 9.10.13 herein, the Contractor shall use the current developer and maintainer for the duration of the Contract, and if renewed; J.A.Watts, Inc., 940 West Adams St., Suite 400, Chicago, IL. 60607, Telephone 312-997-3720. Bidders will need to contact JWI to obtain a sample contract and cost estimates of their IT support hourly charge for the EMCIT development and operational support. Normal service restoration shall be within twelve (12) hours, except as otherwise permitted by the Engineer.

Premium Software Assurance Agreement (PSAA)

The Contractor shall renew all Premium Software Assurance Agreements (PSAA) with 360/Flir Surveillance for VDS, Google maps and DMS Central Control System servers and clients located at TSC, District 1 ComCenter, District 3, and District 2 Radio Communications Center. The agreement shall be renewed annually as the EMC Contract options are renewed. The current PSAA expires February 23, 2016.

The PSAA shall provide coverage for the following:

- Support coverage Monday to Friday 8:00am to 5:00pm (PST) excluding major holidays
- Unlimited telephone, email and online technical support
- Logon web access to online knowledge base and FAQ's

- Free access to all interim and major releases, patches and device drivers within the product category
- Access to dedicated technical support developers
- Priority response and resolution of issues
- Remote configuration and troubleshooting assistance via internet

Skyline NTCIP Central Control Software

The Contractor shall renew the current Skyline NTCIP Central Control Software, Annual Maintenance License, which covers the software used to maintain and operate Skyline DMS Sign within District 1. The current Skyline NTCIP Central Software Annual Maintenance license is due to expire in February, 2016.

The Skyline NTCIP Central Control Software shall include the following;

- Telephone Assistance and/or via email, Monday through Friday, 8am to 5 pm MTN time
- Software upgrades, updates, and new releases or versions of software at such time as Skyline makes update available

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 contract year. Letters of intent shall be submitted to the Engineer at the Pre-Construction Meeting and prior to any EMC renewal.

Solar Winds

The Contractor shall renew and maintain the SolarWinds Network Performance Management (NPM) server and software on the IDOT District One VDS network. The Network Performance Management software, NPM, and server shall be maintained at the Electrical Maintenance Field Office/TSC building. The Contractor Dispatch Center shall also have an NPM terminal to access the IDOT VDS network. The Contractor shall supply the Department with software operational support (maintenance) for the NPM software, equal to or exceeding SolarWinds Orion Network Performance Management Software, for each contract year. Software maintenance shall include free access to any software updates, upgrades, and 24/7 support from the vendor.

Network Managed Service Support

The Contractor shall furnish Netrixs managed network service support to monitor IDOT EMC network system 24X7. The Network management services shall provide event response notification and ticket management for critical alerts, restoration to incidents and problem management. The Network Management Service provider shall send out alerts and notification of critical events to IDOT and EMC designated personnel. The

services shall include reporting and response management, and quarterly reports shall be provided for asset management, service review, and work specified in Article 9.10.5

The name of the proposed Network managed Service Support vendor shall be provided with references and resumes of qualified personnel for IDOT approval at the Pre-Construction meeting.

INET/ATMS MAINTENANCE AND Software Support

The Contractor shall employ a sub-contractor for INET/ATMS specialty work. The vendor shall have an existing business presence within District1, a 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. In addition, five (5) years experience is required for:

- A data acquisition system, specifically synchronized VMIC front end processors
- Coordination control of Dell Power Edge R720 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 the Traffic Systems Center
- The software environment, similar to that of the Traffic Systems Center
- Maintenance and support of similar systems in size, and scope, in the Sun Solaris environment

The vendor shall provide an offsite repository which provides for a complete INET/ATMS system back up in the event of a catastrophic failure which requires a complete reloading of the INET/ATMS software and configuration.

Submittal for Engineer Approval

The Contractor shall submit the following items at the Pre-Construction Meeting:

- The name of the proposed INET/ATMS vendor
- List of previous projects which involved the ATMS/I-Net software environment, the organization, contact person and title
- Resumes of the qualified personnel listed to work on the INET/ATMS

  (Resumes shall list previous projects and specific duties/responsibilities the individuals were responsible for as part of the project.)

9.22 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.

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

The Contractor is also responsible, under routine maintenance, for the first $2000 in costs, regardless of the total overall cost, necessary to replace each item of equipment in the Surveillance System found to be defective, malfunctioning, or non-operational, or for software, or materials which do not meet manufacturers' specifications.

9.23 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.

- Barrier crash detector
- Barrier dragnet assembly
- Barrier tape cartridges
- Equipment from Contract Spare Parts Inventory

- Gig-E switches
- LED Chevron, Auxiliary, Lane Usage, Gore and Barrier Signs
- Monitors
- Ramp Gates
- SM/MM Fiber Transceivers
- Swing Gate Arms

Equipment as listed above and other additional equipment in the Contract Spare Parts Inventory 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. The Contract Spare Parts Inventory will be replenished as needed and approved by the Engineer.

ARTICLE 9.24 SURVEILLANCE SYSTEM CAMERA LOCATIONS

AS PAID THROUGH AN EXISTING SURVEILLANCE LOCATION UNDER ROUTINE MAINTENANCE

Sys.	Type	Camera #	Cab. #	Main Route	Cross Street	Co.	Qty
S	CAM	FS1A	B4	I 57	100th St	CO	2
S	CAM	FS2	B6	I 57	104th St	CO	3
S	CAM	FS2A	C7	I 57	107th St Throop St	CO	4
S	CAM	FS3	C8	I 57	110th St	CO	5
S	CAM	FS3A	D13	I 57	114th St	CO	6
S	CAM	FS3B	DMS29	I 57	116Th St (south of)	CO	7
S	CAM	FS4	E14	I 57	121st St	CO	8
S	CAM	FS5	F16	I 57	125th St (south of)	CO	9
S	CAM	FS5A	G18	I 57	128th St Oak St	CO	10
S	CAM	FS5B	G20	I 57	Broadway (north of)	CO	11
S	CAM	FS6	H22	I 57	Charles Rd North of 138th St	CO	12
S	CAM	FS6A	H24	I 57	Thornton Rd (south of)	CO	13
S	CAM	FS7	I26	I 57	141St St	CO	14
S	CAM	FS7A	I23	I 57	Norris St Oakley Ave	CO	15
S	CAM	FS8	J28	I 57	IL 83 Sibley Blvd Ent	CO	16
S	CAM	FS8A	J25	I 57	SW of IL 83 Sibley Blvd	CO	17
S	CAM	FS8B	J32	I 57	I 294	CO	18
S	CAM	FS9	K27	I 57	Kedzie Ave (north of)	CO	19
S	CAM	FS9A	K29	I 57	155th St	CO	20
S	CAM	FS10	L33	I 57	US 6 159th St	CO	21
S	CAM	FS10A	L35	I 57	US 6 159th St (south of)	CO	22
S	CAM	FS11	M37	I 57	Crawford Ave Pulaski Rd (south of)	CO	23
S	CAM	FS11A	N39	I 57	167th St	CO	24
S	CAM	FS12	N43	I 57	167th St (southwest of)	CO	25
S	CAM	FS12A	T45	I 57	IL 50 Cicero Ave	CO	26
S	CAM	FS12B	T47	I 57	173rd St	CO	27
S	CAM	FS13	T44	I 57	175th St (south of)	CO	28
S	CAM	FS13A	T46	I 57	I 80 (north of)	CO	29
S	CAM	IK1	G9	I 290 IKE	Paulina St	CO	30
S	CAM	IK1A	G9	I 290 IKE	Paulina St	CO	31
S	CAM	IK3	I19	I 290 IKE	Sacramento Ave	CO	32
S	CAM	IK4	J27	I 290 IKE	Independence Blvd	CO	33
S	CAM	IK4A	J27	I 290 IKE	Independence Blvd	CO	34

S	CAM	IK6	L39	I 290 IKE	Central Ave	CO	35
S	CAM	IK10	O57	I 290 IKE	1st Ave	CO	36
S	CAM	IK11	R58	I 290 IKE	25th Ave	CO	37
S	CAM	IK12	S71	I 290 IKE	US 12 45 Mannheim Rd (east of)	CO	38
S	CAM	IK13	S66	I 290 IKE	US 12 45 Mannheim Rd (west of)	CO	39
S	CAM	IK14	V72	I 290 IKE	I 88 Tollway Merge	CO	40
S	CAM	IK21	E109	I 290 IKE	Addison Rd Median	DU	41
S	CAM	IK25B	121	I 290 IKE	Devon Ave	DU	42
S	CAM	IK26	122	I 290 IKE	Biesterfield Rd Exit Ramp (south of)	CO	43
S	CAM	IK26A	123	I 290 IKE	Biesterfield Rd (south of)	CO	44
S	CAM	IK27	M124	I 290 IKE	Biesterfield Rd (.3 mile north of)	CO	45
S	CAM	IK27A	M126	I 290 IKE	Biesterfield Rd (.6 mil north of)	CO	46
S	CAM	IK28B	O132	I 290 IKE SB	IL 72 Higgins Rd Ent Ramp	CO	47
S	CAM	IK29A	O127	I 290 IKE NB	IL 72 Higgins Rd Exit Ramp	CO	48
S	CAM	IK29C	129	I 290 IKE NB	Woodfield Dr Ent Ramp	CO	49
S	CAM	KE9	H99	I 90 JFK	Bryn Mawr Ave	CO	50
S	CAM	KEFOS	CMS18	I 90 94 JFK	Foster Ave	CO	51
S	CAM	NS1	I4	I 355	Lake St	DU	52
S	CAM	ST4	DMS5	I 55 STEV	California Ave (west of)	CO	53
S	CAM	ST6	13	I 55 STEV	IL 50 Cicero Ave (east of)	CO	54
S	CAM	ST6A	15	I 55 STEV	Il 50 Cicero Ave Exit Ramp	CO	55
S	CAM	ST7	26	I 55 STEV	Central Ave (east of)	CO	56
S	CAM	ST8	32	I 55 STEV	Central Ave (west of)	CO	57
S	CAM	ST9	21	I 55 STEV	IL 43 Harlem Ave (east of)	CO	58
S	CAM	ST10	23	I 55 STEV	IL 43 Harlem Ave	CO	59
S	CAM	ST10A	27	I 55 STEV	1st Ave (.5 mile east of)	CO	60
S	CAM	ST11	38	I 55 STEV	1st Ave (east of)	CO	61
S	CAM	ST12	42	I 55 STEV	1st Ave (.75 mile west of)	CO	62
S	CAM	ST12A	44	I 55	1st Ave (1.25 mile west of)	CO	63

				STEV			
S	CAM	ST13	DMS23	I 55 STEV	East Ave (.5 mile east of)	CO	64
S	CAM	ST14	R43	I 55 STEV	US 45 Lagrange Rd (.5 mile east of)	CO	65
S	CAM	ST14A	R47	I 55 STEV	US 45 LaGrange Rd (NW Quad)	CO	66
S	CAM	ST14B	R54	I 55 STEV	US 45 LaGrange Rd (SW Quad)	CO	67
S	CAM	ST15	R49A	I 55 STEV	Willow Springs Rd	CO	68

SURVEILLANCE CAMERAS NOT CURRENTLY ON EMC MAINTENANCE

(INCIDENTAL TO THE SURVEILLANCE SYSTEM)

Sys.	Type	Camera #	Cab. #	Main Route	Cross Street	Co.	Qty
S	CAM	ST11A	40	I 55 STEV	1st Ave (West of)	CO	1
S	CAM	IK25A	E116	I 290 IKE	SB Thorndale Ave Exit	CO	2

PLANNED MAINTENANCE CAMERAS

WHICH WILL BE INCIDENTAL TO A SURVEILLANCE LOCATION

Sys.	Type	Camera #	DMS #	Main Route	Cross Street	Co.	Qty.
S	CAM	BF8A	DMS 26	I 94 NB	145th St	CO	1
S	CAM	BF8B	DMS 25	I 94 SB	145th St	CO	2
S	CAM	BF13	DMS 27	IL 394 NB	186th St	CO	3
S	CAM	KE12	DMS 19	I 90	IB Canfield Ave	CO	4
S	CAM	FS11B	DMS 42	I 57	163rd St	CO	5
S	CAM	IK22	DMS 43	I 290	Mill Rd	DU	6
S	CAM	NS1A	DMS 44	I 355	S of US 20 Lake St	DU	7

Cameras are considered additional equipment to an existing Surveillance System location and will be paid through routine maintenance for the duration of the Contract.

ART. 9.25 LIST OF VENDORS:

COVERAGE	DESCRIPTION	COMPANY NAME	CONTACT NAME	TELEPHONE & EMAIL
1/1/16 -- 12/31/16	REVLAC Maintenance	ESP, Engineered Software Products, Inc., 1075 Progress Circle, Lawrenceville, GA 30043	Grib Murphy	770-682-8259
1/1/16 -- 12/31/16	Annual Software Support Agreement for: Catalog # A-BP 9800DC8AUTOC DIRECTCNT 8-5 AUT, & Catalog # A-BP 9800DC24HMICOM DIRECTCNT 7X24 Large Packet of Information from Rockwell Automation with Site Support Agreement, Supported Software Listing, Authorization Number 7010401	Purchase Order to: EESCO, Englewood Electrical Supply United Electric Division of WESCO Distribution, Inc., Joliet, IL Invoice from: EESCO, 2401 Internationale Pkwy, Unit C, Woodridge IL 60517	N/A	N/A
4/1/16 -- 3/31/17	Hillside/REVLAC, Annual UPS Support Agreement, Part # EDP703020-2X2F UPS, Serial # B213609, Tag # 1530371, & Part # DCAB-30KLBCH Battery, Serial # 1530373, Tag # 1530373, Site ID # 128576	Purchase Order to: Protech Services 28915 North Herky Dr., #110, Lake Bluff, IL 60044 Invoice from: ProTech Services 610 Executive Campus Dr., Westerville, OH 43082	N/A	800-882-6474

4/1/13 -- 3/31/14	Nordic/REVLAC, Annual UPS Support Agreement, Part # N108S0312600 UPS, Serial # 1123803005BU6L4, Tag # 1566600, Site ID # 128575	Purchase Order to: Protech Services 28915 North Herky Dr., #110, Lake Bluff, IL 60044 Invoice from: ProTech Services 610 Executive Campus Dr., Westerville, OH 43082	N/A	800-882-6474
4/1/13 -- 3/1/14	REVLAC Buildings A, C, D, and E, Annual UPS Support Agreement			
1/1/13 -- 12/31/13	SmartNet Coverage for CISCO Equipment, software extended support for 24/7 coverage and 4 hour equipment replacement delivery	AT & T Datacomm Inc. P.O. Box 66998, St. Louis, MO 63166	Laura Langen	720-889-8692 II2726@att.com
1/1/16 -- 12/31/16	District 1 Microwave Radio Warranty Plus Support Agreement NW-NA&C, Megastar, for IDOT Equipment, Cost Code S, HSTX Part #: SNA-BNWXA1001232	Avait Networks 637 Davis Drive Morrisville, NC 27560	John Kingsley Santa Clara, CA Billing Office	408-567-7000 John.Kingsley @ Aviatnet.com
1/1/16 -- 12/31/16	AVL Equipment, Base Stations, Controllers, Modems, Radios Maintenance & Support: IP MobileNet, 1 Yr. Warranties: WARIPM01, WARIPB01, WARIPNC1	IP MobileNet 1221 E. Dyer Rd, Suite 250, Santa Ana, CA 92706		714-434-6019
1/1/16 -- 12/31/16	Radio removals, re-installations, and new installations	Chicago Communications	N/A	

1/1/16 -- 12/31/16	Annual Service Agreement, 24-Port Voicemail System for ComCenter, with 24/7 software support and field response during business hours	Time Business Systems 916 Central Ave. Roselle, IL 60172	N/A	630-529-5220
1/1/16 -- 12/31/16	EMCMS, Hardware & Software Maintenance	Xsys, Inc. 653 Steele Dr., Valparaiso, IN 46385	Arman Sarkisian	219-477-4816 IDOT@Xsys.com
1/1/16 -- 12/31/16	Network Performance Management and Software Annual Agreement for Dist 1 VDS Network	360 Surveillance	Jim Barry Traffic Signal Company	630-513-8000 trafsigco@aol.com
1/1/16 -- 12/31/16	Network Performance Management and Software Annual Agreement for Dist 1 Headquarters Network	360 Surveillance	Jim Barry Traffic Signal Company	630-513-8000 trafsigco@aol.com
1/1/16 -- 12/31/16	Google Earth Licensing	360 Surveillance	Jim Barry Traffic Signal Company	630-513-8000 trafsigco@aol.com
1/1/16 -- 12/31/16	Software Operational Support & Maintenance for the NPM software	SolarWinds	N/A	512-530-8100 512-682-9300
1/1/16 -- 12/31/16	Yearly Tech Support for All Pump Station SCADA System Software		N/A	
1/1/16 -- 12/31/16	Alarm Center for Windows, Upgrade & Support for Item ACS-220WW, SN#6177, refer to invoice for specifications	Security Information Systems, Inc., 6314 Kingspointe Parkway #3, Orlando, FL 32819	N/A	407-345-1550
1/1/16 -- 12/31/16	INET, 24/7 on-call service capability, software maintenance and support, provide monthly report on ATMS system health for each of 3 main Sun Servers	Delcan, 650 E. Alqonquin Rd, Suite 104, Schaumburg, IL. 60173	Scott Lee	847-925-0120

1/1/16 -- 12/31/16	Virus Protection Software annual renewal for DMS field units		N/A	
1/1/16 -- 12/31/16	DMS System, PSAA Premium Software Assurance Agreement for DMS Central Control system servers & clients at TSC, Dist 1 ComCenter, & Dist 2 Radio Com- Center, including support coverage during business hours	360 Surveillance	N/A	
1/1/16 -- 12/31/16	NTCIP Central Control Software, Annual Maintenance License, for software to maintain and operate DMS Signs, business hour response, software upgrades	Skyline Products	N/A	
1/1/16 -- 12/31/16	TSC, UPS Maintenance & Support, 24/7, for Eaton PowerWare, 9390-100, EC515CBB07, 80 batteries		N/A	
1/1/16 -- 12/31/16	EMCIT, Electrical Maintenance Contract, ISSUETRAK Software, Inc.	IssueTrak, Inc	Ed Schoonveld	312-997-3720 eschoonveld@jwincorporated.com

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, combination poles with luminaire mast arms including the luminaire, lighting mast arm, combination pole lighting controls, combination pole cabling and other appurtenances. The Closed Loop Monitoring System (CLMS) includes approximately 325 master controllers interconnected to 2250 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 Division of Traffic's PASSAGE system currently includes approximately three hundred twenty five (325) and Kane County Division of Transportation traffic management system has approximately thirty-five (35) IDOT intersection controllers with additional intersections planned. Other agencies such as the City of Aurora also operate traffic management systems on State routes.

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, rectangular rapid flashing beacons (RRFB) and all necessary appurtenances.

All combination poles with luminaire mast arms including the luminaire(s), lighting mast arms(s), combination pole lighting controls and cabling shall be maintained under Article 10, the Traffic Signal System and shall be considered a component of the traffic signal installation or location. The luminaires(s), the lighting mast arm, and cabling for the luminaire on combination mast arm poles shall be maintained in the manner listed in Article 7, Lighting and Sign Illumination System. Standard light poles that have traffic signals attached will be maintained in Article 7, except in some instances the poles may be under maintenance of other agencies.

For a list of Traffic Signal Locations refer to Section 3.

10.1.1 Traffic Signals – System Equipment Type - T-1a

The Contractor shall maintain all traffic signal equipment connected 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 or connected to the traffic signal controller and cabinet, including but not limited to the following:

- Traffic signal heads and mounting hardware, traffic signal posts and bases, mast arm assemblies, poles, shrouds, screening, and foundations including anchor bolts.

(The traffic signal heads shall consist of, but are not limited to, signal sections, all mounting hardware, 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, accessible pedestrian signals (APS), countdown pedestrian signals and associated signs

- Pre-timed, semi-actuated, or NEMA Type 1 or NEMA Type 2 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, intersection monitoring devices, and transit signal priority (TSP) 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 Traffic 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 Traffic 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 Traffic Signal Engineer.

- All vehicle detection including magnetic detector(s), wireless detector(s), video detector(s), cameras, detector loop(s), micro loops, preformed detector loops, microwave detector(s), radar detector(s) FLIR type detection camera 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 and cleaning to assure proper operation as directed by the Traffic Signal Engineer. Microwave or radio 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, LEDs or fiber optic lights)

- Illuminated street name signs

(The illumination is generally accomplished by LEDs. 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 Traffic Signal Engineer).

- Traffic signal conduit and interconnect conduit and raceways 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 (PTZ) 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 Traffic Signal Engineer)

10.1.2 Span Wire Traffic Signal – System Equipment Type - 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/push buttons, vehicle detectors, battery back-up (UPS), controller cabinet, controller, master controller, system interconnect equipment and all other associated equipment.

10.1.3 Flashing Overhead Mount Beacons – System Equipment Type - 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 - System Equipment Type - T-2b

The Contractor shall maintain a signal head(s), flashing beacon low mount, solar powered flasher (where applicable), flasher controller in a housing, solar panels, batteries, ground rods, service installation, a traffic signal post, foundation, conduits and handholes. The signal head may consist of one or more signal sections mounted on the same object.

10.2 GENERAL MAINTENANCE RESPONSIBILITIES

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 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 Traffic Signal Engineer

- Maintain and update the EMCMS or EMCIT data for all traffic signal items. Also, when transferring a traffic signal off IDOT maintenance, the Contractor shall include on the Locations Notes page or other permanent data field approved by the Engineer, the IDOT contract or Permit number, IDOT Local Roads and Street's section number, Tollway contract number, or similar reference.

- 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 central/traffic (CMS, TMS, etc.) management systems for Contractor personnel and IDOT Signal and System Engineers' laptop and desk computers (approximately 15 locations). This shall include but is not limited to the latest versions of Centracs, Tactics, TransSuite, MarcNX, and Aries as directed by the Traffic Signal Engineer.

- Purchase and maintain repair and testing equipment necessary to meet the response or repair time requirements of the Contract. Calibration of test equipment shall be completed in accordance with manufacturer recommendations.

- Provide technical assistance at traffic signal inspections and maintenance transfers

- Provide inspections monthly of the traffic signal system through Contractor provided staff of IMSA level II technicians

- Clear snow, ice, dirt, debris or other condition that obstructs visibility of any traffic signal display or access to traffic signal equipment

- Trim vegetation to provide visibility of traffic signals as directed by the Traffic Signal Engineer

- Relamp half of all 135 watt and 90 watt signal sections each contract year. Relamp all 54 watt and 150 watt lamps annually. Relamp 80 intersections with LED type signal sections annually.

- Replace UPS batteries at 15 traffic signal locations

- Record and maintain data base for traffic signal equipment malfunctions and LED module outages by date, location, manufacturer, type, model and other related information

- Inspect all mast arm poles yearly and provide report on damage poles

- Inspect half the number of conflict monitors and MMUs (group A) in 2016 and 2018 and the remaining conflict monitors and MMUs (group B) in 2017. The Contractor shall submit the list of groups A and B in Excel spread sheet format or other format approved by the Engineer for approval.

- 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 company.

- 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 (PASSAGE), Kane County and any other Traffic Management Center (TMC) system within Region One/District One. The Contractor, at no cost to the Department, will supply to the Department any new software required for the monitoring and maintenance of TMC system signals. The signals within the TMC system 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 system are included in the CLMS. All CLMS requirements remain in effect for all signals transferred to this system.

- When bagging signal heads is required, light tan colored traffic and pedestrian signal reusable covers shall be used to cover dark/un-energized signal sections and visors. Covers shall be made of outdoor fabric with urethane coating for repelling water, have elastic fully sewn around the cover ends for a tight fit over the visor, and have a minimum of two straps with buckles to secure the cover to the backplate. A center mesh strip allowing viewing without removal for signal status testing purposes shall be part of the cover. Covers shall include a message indicating the signal is not in service.

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 in a searchable data base format approved by the Engineer of each response from the time of the initial report (ticket issuance) to the time of the final permanent repair. PDF files will not be acceptable. The Contractor is required to notify the Traffic Signal Engineer by email by the next business day 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 for which the Contractor will be allowed to perform corrective action on the Traffic Signal System.

FAILURE OR DAMAGE TO:

	RESPONSE	SERVICE	PERMANENT

ITEM	TIME	RESTORATION	REPAIR
Cabinet	1 hour	24 hours	21 days
Controllers and Peripheral Equipment	1 hour	4 hours	21 days
System Detector Loop	1 hour	NA	7 days
All Other Detectors	1 hour	NA	21 days
Signal Head and Lenses	1 hour	4 hours	7 days
Aviation Red Beacon	1 hour	4 hours	7 days
Mast Arm Assembly and Pole	1 hour	4 hours	7 days*
Traffic Signal Post	1 hour	4 hours	7 days
Cable and Conduit	1 hour	4 hours	7 days
Interconnect and Telemetry	1 hour	4 hours	7 days
Graffiti Removal	NA	NA	7 days
Misalignment of Signal Heads	1 hour	4 hours	4 hours
Closed Loop Monitoring System	1 hour	24 hours	14 days
Post and Poles Plumb Vertically	NA	NA	21 days
Controller, Post & Pole Foundations	NA	NA	21 days
Complaints, Calls, Controller or System Alarms, Timing, Phasing, Programming	1 hour	4 hours	NA
Patrol Truck Deficiencies	NA	24 hours	24 hours

*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 current Manual on Uniform Control Devices (MUTCD) for driver visibility and temporary replacement of damaged or knockdown of a mast arm pole assembly shall require construction of a full or partial span wire signal installation or other method approved by the Engineer, at no additional cost to the Department, to assure signal heads are located overhead and over traveled pavement. Temporary replacement of mast arm mount signals with post mount signals will not be permitted.

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 LED module, 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. LED modules not providing a full circular color, arrow, symbol and the like shall be replaced within one (1) working day for red or red arrows indications and two (2) days for all other indications following discovery and/or notification of the outage.

Immediate corrective action must be provided for partially or dark LED or incandescent type pedestrian indications and internally illuminated signs. The replacement of a LED module, damaged socket or damaged cable for a pedestrian signal indication or 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 malfunctioning LED module, burned out lamp or lamps, the reflector, lens and LED module lens cover 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/EMCIT documentation requirements.

The location of a temporary or permanent traffic signal head installation shall meet the requirements of the MUTCD and the following:

- The minimum acceptable signal display is two (2) overhead 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. Existing conditions may require additional signal displays as directed by the Traffic Signal Engineer.

- 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.

- Damaged signal heads including pedestrian signals and push buttons, including APS type, shall be replaced in-kind. Incandescent shall replace incandescent; LED's shall replace LED's; new pedestrian count-downs shall replace pedestrian count-down types, etc.

- 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 except that twelve inch sections shall replace eight inch or nine-inch sections. LED modules shall be replaced with LED modules of the same make to minimize performance differences, unless directed otherwise by the Traffic Signal 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 Traffic Signal Engineer. Transition out of flashing mode shall follow MUTCD procedures.

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 R1-1-36x36 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 Traffic Signal 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 Traffic Signal 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 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 and the District 1 Traffic Signal Special Provisions.

The Contractor shall:

- Analyze all fiber test results insuring performance conforms with the Standard Specifications for Road and Bridge Construction and the District 1 Traffic Signal Special Provisions.

- 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 Special Provisions.

- 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 or MMU while all vehicle traffic is stopped, and shall report any operational discrepancies or signal outages to the Traffic Signal Engineer immediately.

- Assist the Traffic Signal Engineer in walking all approaches of the signal installation inspecting all traffic signal items for conformance with the Department's 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 Traffic Signal Engineer. The punch lists shall be prepared and provided by the Traffic Signal 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, patching or grinding construction contracts.

10.8 PATROL INSPECTIONS

10.8.1 General Requirements

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 once every month for proper alignment of vehicle and pedestrian signal heads, display outages (all sections of every pedestrian and vehicular signal head), visors, backplates, alignment of posts and mast arm poles, mounting hardware, aviation obstruction lights, special traffic signal sections with red lenses and accompanying circular white halo lamps, shielding of optically programmed faces, foundations, anchor bolts, and general operation of the traffic signal. The Contractor shall repair or replace all worn, missing or damaged components as specified herein.

Unless otherwise permitted or requested by the Traffic Signal 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.

When conducting the Patrol Inspection each Traffic Signal Patrolmen shall notify the EMC Dispatch Center of the following:

- Patrolman Arrival and 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)

All repairs not completed at the time of the patrol route inspection must be noted on the Ticket 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.

At the end of each work day the EMC Dispatch Center shall notify the Traffic Signal Engineer and all Department TS Area Engineers and Technicians, via email, 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

The EMC Dispatch Center is required to keep a Patrol Route Maintenance Log. All Patrol records shall be maintained and submitted to the Traffic Signal Engineer; the Weekly Patrol Report, and the four weeks shall be transmitted in the monthly routine work submittal to the Engineer, and also provided on a CDROM.

10.8.2 Routine Patrol Duties and Responsibilities

The Contractor's responsibilities shall include inspecting, repairing and replacing the following items:

- Align all signal heads, traffic signal posts, controller or service installation pedestals, mast arm assemblies and poles, and mounting hardware.

- All poles, foundations, posts and mounting hardware 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, back plates, 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, back plates, 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.

- Signal back plates shall be replaced or re-painted if any unpainted surface is exposed.

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 once every month:

- 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 setting 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 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. Bicycle loop detector amplifiers shall be tested for proper operation. 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, tablet or other device approved by the Traffic Signal Engineer.

- 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, UPS, mast arm pole assemblies, posts, fiber optic cable handholes and other items as listed herein, shall be recorded or verified annually for use in the District's record retention and maintenance system. Refer to Article 4.17.7 for GPS documentation.

- 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. Batteries not meeting minimum ratings and capacities shall be replaced under routine maintenance.

- 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 create a ticket and notify the appropriate 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 submittal.

10.8.4 Routine Work Requests – RR Tickets

The Contractor shall provide signal operating inspection tasks upon request (RR Tickets) such as:

- Inspect the timing operation of a signal installation at a specific time period and provide a recommendation for improving traffic flow
- Program timing parameter changes
- Determine the phasing or operation of a signalized installation
- Check the condition or verify the presence of equipment at a signalized location
- Provide a copy of timing parameters in use at a signalized location
- Provide recommendations to improve the safety or the operation of a signalized location
- Provide a compiled list of all locations meeting a specified criteria

10.9 INVENTORY REQUIREMENTS

10.9.1 Asset Inventory

The Contractor shall provide a complete traffic signal equipment inventory, in an Excel spreadsheet, of the signalized intersection including signal equipment located inside and outside of the controller cabinet. The exact format and inventory items shall be determined by the Traffic Signal Engineer. This work shall be completed by May 1st of

2016, and kept current with maintenance transfers of new equipment. If this Contract is renewed the asset inventory information shall be kept current through the renewal years.

The Contractor shall also be responsible for updating and maintaining the Access data base or other data base designated by the Traffic Signal Engineer for traffic signal equipment inventory. The data base shall have corrections noted and submitted to the Traffic Signal Engineer with the yearly May 1st Asset Inventory.

10.9.2 New Equipment on Maintenance Transfers

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.

10.9.3 GPS Verification

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. Refer to Article 4.17.7 for GPS Documentation.

10.10 GROUP REPLAMPING OF FLASHING BEACON AND TRAFFIC SIGNAL LOCATIONS

10.10.1 Schedules and Reports

Replacement of Incandescent Signal Displays

Most of the traffic signals in IDOT District One, including pedestrian signals, have been converted or are under contract to be converted to LED type optics. The Contractor shall replace the signal displays (intersection and pedestrian signals) at half the

remaining state maintained incandescent traffic signal locations annually. The Contractor shall complete the work by October 1st of each the calendar year.

Re-Lamping Schedule Prepared by Contractor

The Contractor shall provide a schedule of all locations to be relamped by each relamping crew. This schedule shall be approved by the Department Traffic 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 Traffic Signal 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 Traffic Signal Engineer a completion report no later than August 1st of the contract year.

The schedule for the second year and third 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 Traffic Signal 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.

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 wattages. 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 Traffic Signal Engineer prior to March 1 of the contract year. The Contractor shall complete the work by October 1 of each 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 be approved by the Traffic Signal Engineer and meet all current ITE and NEMA standards and the requirements of the Standard Specifications for Road and Bridge Construction and The District 1 Traffic Signal Special Provisions. The replaced LED display shall become the Contractor’s property and shall be recycled without re-use.

10.11 UNINTERRUPTIBLE POWER SUPPLY (UPS) BATTERY REPLACEMENT

The Contractor shall replace all UPS batteries at 15 State maintained traffic signal locations each contract year. The proposed locations for battery replacement are listed herein. This list will be finalized by March 1 of each contract year by the Traffic Signal Engineer with battery replacement work for all locations completed by October 1st of each contract year.

Work shall include, but not limited to, removal of existing batteries from State ROW, furnishing and installing new battery replacements, recycling of existing batteries, cleaning of battery cable connections and cleaning of UPS compartment shelves, vents and filters. New batteries shall meet the requirements listed in the District 1 Traffic Signal Special Provsions for Uninterruptible Power Supply including run time, sizing, rating and warranty.

Existing batteries shall be recycled meeting all applicable sections of US EPA and IL EPA publications along with the Code of Federal Regulations for transportation.

10.12 ANNUAL CONFLICT MONITOR/TESTING PROGRAM

Conflict monitors and MMUs shall be tested once every two years. One-half of the system shall be tested by November 15th of each contract year. In addition, the conflict monitor or MMU shall be tested after damage is done to the cabinet such as a lightning strike, cabinet hit or knocked-down, etc. The Contractor shall conduct a complete bench test of all conflict monitors or management malfunction units. The testing method shall be pre-approved by the Traffic Signal Engineer and shall include:

- Removing the intersection's monitor and running a complete test at the Contractor's shop with a conflict monitor/MMU tester unit.

- A spare monitor should be installed temporarily while the test is being performed or monitors may be shop-tested by rotating pre-tested monitors to the field.

- Documentation of the tested monitor should be made which includes the following:
  1. Date
  2. Name of Technician
  3. Location – including EMCMS location number, intersection name, city and/or county
  4. serial number of conflict monitor
  5. Comments regarding fail or pass conditions

- Failed monitors should either be repaired so that they pass the monitor test or replaced with a new monitor that passes the test.

Unless prior approval is given by the Traffic Signal 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 Traffic Signal 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 in an Excel spreadsheet file saved to a CD-ROM and submitted to the Traffic Signal Engineer by December 1st. 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.

10.13 ANNUAL MAST ARM ASSEMBLY AND POLE INSPECTION

The Contractor shall inspect all mast arm assemblies, mast arm poles and mounting brackets and 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 10.10 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 10.10, 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
- Mast-to Pole Connection
- Pole
- Base Plate
- Anchor Bolts

The arm of the assembly shall be visually inspected at all signal head connections for any defects, such as cracks or buckles. The mast arm-to-pole connection shall 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 shall be inspected for tightness and condition.

The pole shall be checked for external corrosion, impact damage, perforation by rust through, and any discernible deflection, distortion or cracking. The pole shall 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 shall be checked for cracks.

The base plate shall be checked for any severe section loss or deformation.

The anchor bolts of the mast arm shall be inspected to verify that the existing nuts are not loose or missing. The anchor bolts shall also be checked for any corrosion or bending.

Mast Arm Inspection forms are to be scanned and grouped together by intersection. Each traffic signal location shall be one (1) PDF file. The file name is to be labeled in the following format:

- TS#_Date of Inspection_MAI.PDF

- Date of Inspection is to be MMYYYY – no spaces

- Example: TS12345_042016_MAI.PDF

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)705-4424 and take corrective action as directed by the Traffic 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 Traffic Signal 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.

Digital pictures, noted by TS number, location name, county, town and corner (SE, NW, etc.) of any deficient equipment noted in Article 10.13 shall be included with report forms on a labeled CD-ROM.

10.14 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 Traffic 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 Traffic Signal 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 Traffic Signal 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 Traffic Signal Engineer.

10.15 DETECTOR LOOP MAINTENANCE AND REPLACEMENT

10.15.1 Traffic Signal Loop Resealing

The Contractor shall reseal all existing traffic signal detector loop wire which has become exposed or as directed by the Traffic Signal 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.

10.15.2 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 Traffic Signal Engineer to dispatch a patrol person to the location to disconnect the loop detector cable from its terminals and place the affected phase or phases on maximum recall. At this time the Traffic Signal 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 vehicle detector approved by the Traffic Signal Engineer, at no additional cost to the Department. The Department approved vehicle detector shall be installed to provide adequate detection in place of the detector loop to the satisfaction of the Traffic Signal 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 vehicle detector due to frozen or full conduits, with prior approval from the Traffic Signal 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 vehicle 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 Traffic Signal Engineer, install a video

detection system or other Department approved detection system selected by the Traffic Signal Engineer. The new detection system shall be installed in accordance with the applicable specification under Non-Routine Work. The cost of providing and installing the new 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.

10.16 VIDEO AND OTHER DETECTION

At the beginning of the EMC 2016 it is estimated that District 1 will have approximately seventy five (75) intersections with video, radar, wireless or other detection in operation. Video and other detection types will increase each year. The Contractor shall provide license software for each of the System Patrolmen who have video and other detection types in their respective area. The System Patrolmen shall be fully instructed in the operation and maintenance of each detection system.

At the beginning of the EMC 2016 it is estimated that District 1 will have one hundred (100) 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.

10.17 INTEGRATED CLOSED-LOOP TRAFFIC SIGNAL MONITORING SYSTEM (CLMS)

10.17.1 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 weekly reports updating the status of the CLMS. The Contractor shall also provide current 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.

10.17.2 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.

10.17.3 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 Contractor 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 (TRP), Time-of-Day (TOD), 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 Signal 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 Signal 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 email 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 email 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 Traffic Signal 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 Traffic Signal 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 Contractor shall report them to the Traffic Signal 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 Traffic Signal Engineer upon

request. The format, content, and method used to keep the Operational Log shall be approved by the Traffic Signal 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 Traffic Signal Engineer and copies shall be provided to the Traffic Signal 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 Traffic Signal Engineer and the Signal Systems Engineer on the 1st day of the first week and 3rd week 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. 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 Traffic Signal 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 Traffic Signal 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 Traffic Signal 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.

10.18 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.

Tree Trimming Schedule

An annual Tree Trimming Schedule shall be prepared by the Contractor and submitted to the Traffic Signal Engineer for approval by October 1 of the contract year. The Traffic Signal 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.

10.19 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 Traffic Signal 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.)

10.20 LOCKS AND KEYS

Each traffic signal cabinet and UPS 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 Traffic Signal Engineer, equal or better than Master Lock 6125KA. The key number shall be approved by the Traffic Signal 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 and associated UPS cabinet shall have a similar lock number but different cylinder and key than standard traffic signal and UPS cabinets. It is estimated that there are 150

railroad traffic signal cabinets and 2550 standard traffic signal cabinets and 2500 UPS cabinets that require padlocks.

10.21 EQUIPMENT MALFUNCTION AND REPAIR TRACKING

Malfunction and repair of traffic signal equipment shall be recorded by the Contractor on tickets and reported monthly to the Traffic Signal Engineer in a data base on a CDROM. Information shall include date of failure, date of repair or replacement, reason for failure (lightning, water damage, etc.) equipment type, model, manufacturer, location and any other pertinent information as directed by the Traffic Signal Engineer. Equipment replacement information shall include model, manufacturer, and source (new, Department stock, other location etc.). Reports shall include monthly and accumulative totals. LED module failures/outages shall include the information noted above and include age of module, color and display (ball, arrow, pedestrian hand/man/outline/full/count-down, etc.).

10.22 TRAFFIC SIGNAL OUTAGE AND OPERATION REPORT

The Contractor shall maintain a data base that tracks traffic signal outages and operation and generates a report that provides a comprehensive list of these traffic signals locations on a daily and monthly basis. The report shall include, but is not limited to:

- Traffic signal locations that are currently dark or are in flashing red mode
- Traffic signal locations that have been dark or in flashing red mode within the last 24 hour period
- Locations identified by TS number, intersection and route, county and community
- Identify reason for dark or flashing condition with estimated time/date of restoration to normal operation
- Corrective action taken with date and time normal operation was restored

The report shall be generated from the data base and emailed to the Traffic Signal Engineer, Area Signal Engineers and IDOT ComCenter every 8 hours starting at 4am each morning.

In the case of storms or other emergency situations, reports shall be made every 4 hours as or as otherwise directed by the Traffic Signal Engineer. Monthly reports shall be submitted to the Engineer and Traffic Signal Engineer on CDROM.

10.23 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.

10.24 NON-ROUTINE MAINTENANCE

Refer to Section 2 to review Special Provisions for non-routine work pay items.

10.24.1 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 6.0.

10.25 LOGS AND FORMS

A sample of logs and forms as required for this Contract will be available at the Pre-Bid Meeting.

10.26 CONVERT EXISTING ELECTRIC UTILITY SERVICE TO METERED SERVICE

The traffic signal electric utility service at 100 locations per year shall be converted from non-metered to metered service.

The Contractor shall supply and install an electric meter housing, meter socket, riser, service head, conduit, cable, caulking and all appurtenances necessary to provide metered utility service to the traffic signal controller cabinet. Materials shall be in accordance with the electric utility's requirements. The electric utility meter housing shall be mounted to the battery back-up enclosure or other surface approved by the Traffic Signal Engineer. The Contractor shall coordinate with the electric utility company to convert to metered service. The Contractor shall complete the work by October 1st of each calendar year.

10.27 LISTING OF COMBO LIGHTING LOCATIONS

ARTICLE 10.27 COMBO LIGHTING LOCATIONS PAID THROUGH ROUTINE MAINTENANCE FOR THE TRAFFIC SIGNAL SYSTEM

LOCATIONS CURRENTLY ON EMC MAINTENANCE

Loc. #	Ltg. Loc. #	Ltg. Cab.#	Main Route	Cross Street	Co.	Qty
TS15320	L1613	RQ	Green Bay Rd	Winnetka Ave	CO	1
TS5240	L1614	XW	Gross Point Rd	Church St	CO	2
TS5015	L1618	XS	Dempster St	Crawford Ave	CO	3
TS5020	L1619	XP	Dempster St	East Prairie Ave	CO	4
TS5025	L1620	XO	Dempster St	St. Louis Ave Lincolnwood Dr	CO	5
TS1525	L1621	XA	US 41 Skokie Blvd	Golf Rd Simpson St	CO	6
TS1555	L1622	XB	US 41 Skokie Blvd	Foster St	CO	7
TS1590	L1623	XQ	US 41 Skokie Blvd	Old Orchard Rd	CO	8
TS1530	L1624	XU	US 41 Skokie Blvd	Gross Point Rd	CO	9
TS1715	L1643	XG	US 45 IL 21 Milwaukee Ave	IL 68 Dundee Rd	CO	10
TS2625	L1666	XJ	IL 50 Cicero Ave	Touhy Ave	CO	11
TS21553	L1669	XT	IL 72 Higgins Rd	Prairie Stone Parkway	CO	12
TS14780	L1671	RL	IL 62 Algonquin Rd	Meacham Rd	CO	13
TS1010	L1711	YC	US 12 45 Mannheim Rd	US 20 Lake St	CO	14
TS2295	L1718	YF	IL 43 Harlem Ave	Division St	CO	15
TS2270	L1719	YG	IL 43 Harlem Ave	Augusta Blvd	CO	16
TS2290	L1720	YH	IL 43 Harlem Ave	Chicago Ave	CO	17
TS2385	L1721	YI	IL 43 Harlem Ave	Ontario St	CO	18
TS2360	L1722	YJ	IL 43 Harlem Ave	Lake St	CO	19
TS2380	L1723	YK	IL 43 Harlem Ave	South Blvd	CO	20
TS2390	L1725	YM	IL 43 Harlem Ave	Randolph St	CO	21
TS2415	L1726	YN	IL 43 Harlem Ave	Washington St	CO	22
TS2370	L1727	YO	IL 43 Harlem Ave	Madison St	CO	23
TS2400	L1728	YP	IL 43 Harlem Ave	IL 38 Roosevelt Rd	CO	24
TS2110	L1729	YR	IL 43 Harlem Ave	16th St	CO	25
TS5730	L1775	BP	IL 38 Roosevelt Rd	Austin Blvd	CO	26
TS4285	L1792	YS	IL 43 Harlem Ave	Foster Place	CO	27
TS2325	L1794	YT	IL 43 Harlem Ave	Lawrence Ave	CO	28
TS2325	L1796	YU	IL 43 Harlem Ave	Cullom Ave	CO	29
TS1651	L1807	CI	US 45 LaGrange Rd	142nd St	CO	30
TS1650	L1808	CO	US 45 LaGrange Rd	143rd St	CO	31
TS11770	L1875	CQ	IL 7 SW Hwy	Ridgeland Ave	CO	32
TS2620	L1876	ZB	IL 50 Cicero Ave	SW Hwy 93rd St	CO	33
TS4600	L1902	PT	US 20 Lake St	Bloomingdale Rd	DU	34

TS12513	L1906	UA	US 20 Lake St	Marcus Dr	DU	35
TS12505	L1907	UB	US 20 Lake St	Lombard Ave Foxdale Rd	DU	36
TS12500	L1908	UC	US 20 Lake St	Itasca Rd	DU	37
TS12510	L1909	UD	US 20 Lake St	Mill Rd	DU	38
TS12515	L1911	UE	US 20 Lake St	JFK Dr	DU	39
TS15230	L1915	DG	IL 38 Roosevelt Rd	Lorraine St	DU	40
TS15240	L1917	DX	IL 38 Roosevelt Rd	Naperville Rd	DU	41
TS15245	L1918	DY	IL 38 Roosevelt Rd	Main St Wheaton	DU	42
TS15250	L1919	DZ	IL 38 Roosevelt Rd	West St Warrenville Rd	DU	43
TS8225	L1921	PQ	IL 38 Roosevelt Rd	County Farm Rd	DU	44
TS14497	L1944	UW	22nd St Cermak Rd	Windsor Dr	DU	45
TS14495	L1945	PA	22nd St Cermak Rd	York Rd	DU	46
TS6415	L1955	PU	IL 64 North Ave	Berteau Ave	DU	47
TS6430	L1956	PV	IL 64 North Ave	Emroy Ave	DU	48
TS6500	L1957	PW	IL 64 North Ave	York Rd	DU	49
TS6460	L1958	PX	IL 64 North Ave	Myrtle Ave	DU	50
TS856	L2047	KN	IL 38 Roosevelt Rd	14th St	KA	51
TS878	L2067	KW	IL 64 North Ave	Burlington Rd	KA	52
TS750	L2080	KQ	IL 25 River St	IL 25 Wilson St	KA	53
TS785	L2081	KU	IL 25 Washington Ave	IL 25 Wilson St	KA	54
TS4645	L2085	KD	IL 31 Batavia Ave	Wilson St	KA	55
TS730	L2110	EC	US 30 Baseline Rd	Orchard Rd	KE	56
TS21950	L2209	LT	IL 43 Waukegan Rd	High School Dr	LA	57
TS20970	L2403	HN	IL 126 Lockport Rd	Wallin Dr	WI	58
TS7480	L2422	WX	US 45 96th Ave	191St St	WI	59

PLANNED
MAINTENANCE

Loc. #	Ltg. Loc. #	Ltg. Cab.#	Main Route	Cross Street	Co.	Qty
TS5480	L1612	RU	Touhy Ave	McCormick Blvd	CO	1
TS2025	L1616	RP	IL 21 Milwaukee Ave	Main St Niles	CO	2
TS1300	L1631	XX	US 14 NW Hwy	Smith Rd	CO	3
TS1315	L1632	XY	US 14 NW Hwy	Plum Grove Rd	CO	4
TS1190	L1633	XZ	US 14 NW Hwy	Benton St	CO	5
TS3620	L1737	BO	IL 171	Forest Ave Ridgewood Rd	CO	6
TS1640	L1863	ZP	US 45 LaGrange Rd	131st St	CO	7
TS1710	L1864	ZQ	US 45 LaGrange Rd	Southmoor Dr Carl Sandburg School Ent.	CO	8

TS1645	L1865	ZR	US 45 LaGrange Rd	135th St	CO	9
TS1750	L1866	ZS	US 45 LaGrange Rd	144th PL	CO	10
TS1655	L1867	ZT	US 45 LaGrange Rd	147th St	CO	11
TS1660	L1868	ZU	US 45 LaGrange Rd	149th St	CO	12
TS1665	L1869	ZV	US 45 LaGrange Rd	151st St	CO	13
TS1670	L1870	ZW	US 45 LaGrange Rd	153rd St	CO	14
	L1871	ZX	US 45 LaGrange Rd	154th PL Davin Ent.	CO	15
TS1668	L1872	ZY	US 45 LaGrange Rd	156th St Lowe's Ent.	CO	16
TS1701	L1873	ZZ	US 45 LaGrange Rd	163rd St	CO	17
TS12045	L1904	UY	IL 19 Irving Park Rd	York Rd	DU	18
TS9455	L1932	UG	IL 59	Brookdale Rd Bruce Ln	DU	19
TS6380	L1933	UH	IL 59	North Aurora Rd	DU	20
TS20360	L1934	UJ	IL 59	Merldian Parkway Glacier Park Ave	DU	21
TS12140	L1948	UK	IL 59	Liberty St Jefferson Ave	DU	22
TS21930	L1949	UL	IL 59	Meijer Ent. Westridge Ct	DU	23
TS20620	L1950	DC	IL 59	Aurora Rd	DU	24
TS7825	L2287	VH	IL 83 Barron Blvd	Rollins Rd	LA	25
TS7514	L2406	HW	IL 7 159th St	Bell Rd S	WI	26
TS7520	L2407	HX	IL 7 159th St	Bell Rd N	WI	27
TS7626	L2408	HY	IL 7 159th St	Parker Rd	WI	28
TS7525	L2409	HZ	IL 7 159th St	Cedar Rd	WI	29
TS7478	L2416	HE	US 30	Ridgemore Rd	WI	30
TS7475	L2417	HC	US 30	Wolf Rd	WI	31
	L2451	HO	US 6 Eames St	I-55 W Fontage Rd	WI	32

ARTICLE 12.0 – DEFINITIONS, SPECIFICATIONS & STANDARDS

Definitions of Terms Used Herein:

AEGIS District 1 Dial-up Pump Station Alarm System

ANSI American National Standards Institute

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

CLEARING SITE FOR SAFETY
Assure the Electrical, Mechanical and Structural integrity of IDOT property maintained under this contract is safe for workers and the motoring public. Site clearing shall comply with the most current standards (such as NEC and OSHA requirements) as applicable.

CLMS Closed-Loop (Traffic Signal) Monitoring System

CMS Changeable Message Sign

COMCENTER Illinois Department of Transportation, District 1 Communications Center

CONTRACT SPARE PARTS

When used herein refers to stocks of materials and equipment which are state owned, are to be kept separate from the Contactor's materials and equipment, and shall be used exclusively for the Department's installations and systems.

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

DBE Disadvantaged Business Enterprise

DEPARTMENT When used herein stands for the Illinois Department of Transportation

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, 445 Harrison St., Oak Park, IL. 60304

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 declared disaster exclusion will be valid only for the area and time period specified by IEMA and FEMA policies.)

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

INET Intelligent Networks

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, re-appropriated 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
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-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 is held on the third 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

ROW Right of Way

RUS Rural Utilities Service, USDA

SALVAGE
Material/equipment which has been removed from the installed location, inspected for quality, and re-stored in Contract Spare Parts 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"

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 Lighting System, Pump Station System, Surveillance System, and Traffic Signal System.

SYSTEM ENGINEER

When used herein refers to IDOT Engineers in charge of maintenance for a particular electrical system for a designated IDOT Bureau.

SYSTEM TYPE

When used herein refers to various types of equipment within the electrical systems

THIRD PARTY Any entity other than IDOT or the Contractor

TICKET
Maintenance documentation record 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. In 2016 the Department is transitioning to a new program and tickets will be entered on the EMCIT.

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

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 12.0 CHARTS

The below listed information is provided from data submitted by past Contractor(s) and is provided for information purposes only. For this Contract the Department has combined the Advanced Systems with the Surveillance System and the Extra Systems with the Lighting System so the data provided is from historic records.

TICKET TYPES:

AV	AVL
BA	Barrier
CC	CCTV/Camera
CT	Cable Trouble
DA	Damage (not caused by Motorist)
EQ	Equipment Malfunction or Problem
GB	General Billing by Contractor to 3rd Party
ID	IDOT has placed a “Hold” on the Ticket
LP	Loop Problem
MC	Motorist Caused Damage
OM	Off Maintenance
OT	Multiple Outages
RR	Routine Work Request
SO	Single Outage
SR	Service Request
SW	Swing Gate Malfunction
UT	Utility Problem
VO	Void
WA	Working Upon Arrival/Working as Programmed

2014 TICKET TOTALS							
Ticket Type	**Advanced System**	**Lighting System**	**PS System**	**Surv. System**	**Traffic Signal System**	**Extra Systems**	**TOTAL BY TICKET TYPE**
AV	21	0	0	0	0	0	21
BA	14	0	0	0	0	0	14
CC	283	0	0	0	0	0	283
CT	0	26	0	2	111	1	140
DA	2	36	0	12	55	3	108
EQ	191	174	505	705	2455	166	4196
GB	0	9	0	14	84	2	109
ID	0	10	0	6	3	8	27
LP	0	0	0	13	292	0	305
MC	30	331	0	108	432	4	905
OM	0	56	50	0	42	0	148
OT	0	39	0	9	20	68	136
RR	0	9	0	0	0	0	9
SO	6	15	0	143	800	28	992
SR	16	27	39	3	10	5	100
SW	89	0	0	0	0	0	89
UT	12	69	170	41	670	14	976
VO	4	9	8	7	99	4	131
WA	13	25	38	20	633	8	737
Total:	**681**	**835**	**810**	**1083**	**5706**	**311**	**9426**

2013 TICKET TOTALS							
Ticket Type	**Advanced System**	**Lighting System**	**PS System**	**Surv. System**	**Traffic Signal System**	**Extra Systems**	**TOTAL BY TICKET TYPE**
AV	13	0	0	0	0	0	13
BA	9	0	0	0	0	0	9
CC	186	0	0	0	0	0	186
CT	0	11	0	1	104	2	118
DA	11	52	6	41	100	6	216
EQ	206	181	397	683	2390	162	4019
GB	3	13	0	2	55	0	73
ID	0	9	0	7	8	5	29
LP	0	0	0	17	281	0	298
MC	13	335	0	71	452	10	881
OM	0	33	17	7	34	3	94
OT	0	47	0	12	10	74	143
RR	1	0	0	0	0	2	3
SO	2	30	1	181	921	33	1168
SR	7	31	39	1	16	1	95
SW	51	0	0	0	0	0	51
UT	16	93	99	65	612	8	893
VO	6	23	7	5	109	5	155
WA	13	56	26	59	689	6	849
Total:	**537**	**914**	**592**	**1152**	**5781**	**317**	**9293**

2012 TICKET TOTALS							
Ticket Type	**Advanced System**	**Lighting System**	**PS System**	**Surv. System**	**Traffic Signal System**	**Extra Systems**	**TOTAL BY TICKET TYPE**
AV	18	0	0	0	0	0	18
BA	6	0	0	0	0	0	6
CC	186	0	0	0	0	0	186
CT	0	14	0	1	73	3	91
DA	12	39	5	19	46	8	129
EQ	159	196	374	551	2848	69	4197
GB	2	7	0	3	64	0	76
ID	0	1	0	1	0	1	3
LP	0	0	0	21	258	0	279
MC	18	352	0	75	418	5	868
OM	0	36	33	1	37	7	114
OT	0	33	2	2	2	94	133
RR	4	9	0	0	0	6	19
SO	10	29	4	151	761	26	981
SR	19	29	29	4	9	0	90
SW	30	0	0	0	0	0	30
UT	12	201	157	108	699	14	1191
VO	8	16	6	2	54	2	88
WA	5	20	11	5	109	1	151
Total:	**489**	**982**	**621**	**944**	**5378**	**236**	**8650**

2011 TICKET TOTALS							
Ticket Type	**Advanced System**	**Lighting System**	**PS System**	**Surv. System**	**Traffic Signal System**	**Extra Systems**	**TOTAL BY TICKET TYPE**
AV	12	0	0	0	0	0	12
BA	7	0	0	0	0	0	7
CC	220	0	0	0	1	0	221
CT	0	7	0	0	57	1	65
DA	0	21	1	16	15	2	55
EQ	160	268	477	596	3755	144	5400
GB	0	16	0	1	60	0	77
ID	0	2	0	4	0	0	6
LP	0	0	0	35	310	0	345
MC	32	338	0	66	523	5	964
OM	0	57	12	7	43	4	123
OT	0	30	0	0	1	63	94
RR	1	1	2	0	1	3	8
SO	4	35	3	199	1411	26	1678
SR	14	28	14	0	5	2	63
SW	51	0	0	0	0	0	51
UT	19	268	217	119	1023	15	1661
VO	5	6	1	3	9	0	24
Total:	**525**	**1077**	**727**	**1046**	**7214**	**265**	**10854**

2010 TICKET TOTALS							
Ticket Type	**Advanced System**	**Lighting System**	**PS System**	**Surv. System**	**Traffic Signal System**	**Extra Systems**	**TOTAL BY TICKET TYPE**
AV	25	0	0	0	0	0	25
BA	7	0	0	0	0	0	7
CC	160	0	0	0	0	0	160
CT	0	11	0	0	54	1	66
DA	3	3	0	11	5	4	26
EQ	167	343	500	512	3366	179	5067
GB	0	21	1	4	58	1	85
ID	0	0	0	0	0	1	1
LP	0	0	0	83	372	0	455
MC	36	324	0	58	450	5	873
OM	0	39	3	3	38	1	84
OT	0	33	0	0	1	108	142
RR	0	12	0	0	0	0	12
SO	0	34	1	176	1321	26	1558
SR	0	5	0	0	1	3	9
SW	35	0	0	0	0	0	35
UT	4	225	149	111	823	19	1331
VO	2	1	0	2	5	0	10
Total:	**439**	**1051**	**654**	**960**	**6494**	**348**	**9946**

TRAFFIC SIGNAL SYSTEM – TICKET TOTALS BY TYPE AND YEAR

Ticket Type	2014	2013	2012	2011	2010	5 YR AVE BY TICKET TYPE
CT	111	104	73	57	54	**80**
DA	55	100	46	15	5	**44**
EQ	2455	2390	2848	3755	3366	**2963**
GB	84	55	64	60	58	**64**
ID	3	8	0	0	0	**2**
LP	292	281	258	310	372	**303**
MC	432	452	418	523	450	**455**
OM	42	34	37	43	38	**39**
OT	20	10	2	1	1	**7**
RR	0	0	0	1	0	**0**
SO	800	921	761	1411	1321	**1043**
SR	10	16	9	5	1	**8**
UT	670	612	699	1023	823	**765**
VO	99	109	54	9	5	**55**
WA	633	689	109	NA	NA	**477**
Total:	**5706**	**5781**	**5378**	**7214**	**6494**	**6115 5 YR AVG**

PUMP STATION SYSTEM – TICKET TOTALS BY TYPE AND YEAR

Ticket Type	2014	2013	2012	2011	2010	5 YR AVE BY TICKET TYPE
DA	0	6	5	1	0	**2**
EQ	505	397	374	477	500	**451**
GB	0	0	0	0	1	**0**
ID	0	0	0	0	0	**0**
MC	0	0	0	0	0	**0**
OM	50	17	33	12	3	**23**
OT	0	0	2	0	0	**0**
RR	0	0	0	2	0	**0**
SO	0	1	4	3	1	**2**
SR	39	39	29	14	0	**24**
UT	170	99	157	217	149	**158**
VO	8	7	6	1	0	**4**
WA	38	26	11	NA	NA	**25**
Total:	**810**	**592**	**621**	**727**	**654**	**681**
						5 YR AVG

SURVEILLANCE SYSTEMS – TICKET TOTALS BY TYPE AND YEAR

Ticket Type	2014	2013	2012	2011	2010	5 YR AVG BY TICKET TYPE
CT	2	1	1	0	0	1
DA	12	41	19	16	11	20
EQ	705	683	551	596	512	609
GB	14	2	3	1	4	5
ID	6	7	1	4	0	4
LP	13	17	21	35	83	34
MC	108	71	75	66	58	76
OM	0	7	1	7	3	4
OT	9	12	2	0	0	5
SO	143	181	151	199	176	170
SR	3	1	4	0	0	2
UT	41	65	108	119	111	89
VO	7	5	2	3	2	4
WA	20	59	5	NA	NA	28
Total:	**1083**	**1152**	**944**	**1046**	**960**	**1037 5 YR AVG**

ADVANCED SYSTEM – TICKET TOTALS BY TYPE AND YEAR

Ticket Type	2014	2013	2012	2011	2010	5 YR AVG BY TICKET TYPE
AV	21	13	18	12	25	18
BA	14	9	6	7	7	9
CC	283	186	186	220	160	207
DA	2	11	12	0	3	6
EQ	191	206	159	160	167	177
GB	0	3	2	0	0	1
ID	0	0	0	0	0	0
MC	30	13	18	32	36	26
RR	0	1	4	1	0	1
SO	6	2	10	4	0	4
SR	16	7	19	14	0	11
SW	89	51	30	51	35	51
UT	12	16	12	19	4	13
VO	4	6	8	5	2	5
WA	13	13	5	NA	NA	10
Total:	**681**	**537**	**489**	**525**	**439**	**534 5 YR AVG**

HIGHWAY LIGHTING SYSTEM – TICKET TOTALS BY TYPE AND YEAR

Ticket Type	2014	2013	2012	2011	2010	5 YR AVE BY TICKET TYPE
CT	26	11	14	7	11	**14**
DA	36	52	39	21	3	**30**
EQ	174	181	196	268	343	**232**
GB	9	13	7	16	21	**13**
ID	10	9	1	2	0	**4**
MC	331	335	352	338	324	**336**
OM	56	33	36	57	39	**44**
OT	39	47	33	30	33	**36**
RR	9	0	9	1	12	**6**
SO	15	30	29	35	34	**29**
SR	27	31	29	28	5	**24**
UT	69	93	201	268	225	**171**
VO	9	23	16	6	1	**11**
WA	25	56	20	NA	NA	**34**
Total:	**835**	**914**	**982**	**1077**	**1051**	**972** **5 YR AVG**

EXTRA SYSTEMS – TICKET TOTALS BY TYPE AND YEAR

Ticket Type	2014	2013	2012	2011	2010	5 YR AVE BY TICKET TYPE
CT	1	2	3	1	1	**2**
DA	3	6	8	2	4	**5**
EQ	166	162	69	144	179	**144**
GB	2	0	0	0	1	**1**
ID	8	5	1	0	1	**3**
MC	4	10	5	5	5	**6**
OM	0	3	7	4	1	**3**
OT	68	74	94	63	108	**81**
RR	0	2	6	3	0	**2**
SO	28	33	26	26	26	**28**
SR	5	1	0	2	3	**2**
UT	14	8	14	15	19	**14**
VO	4	5	2	0	0	**2**
WA	8	6	1	NA	NA	**5**
Total:	**311**	**317**	**236**	**265**	**348**	**295 5 YR AVG**

TOTAL TRAFFIC SIGNALS -- MOTORIST CAUSED DAMAGE – BY YEAR														
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**TOTAL**	**MO. AVG**
2014	67	40	51	21	26	29	33	23	39	33	37	33	432	**36**
2013	37	56	42	35	31	32	27	23	28	38	41	62	452	**38**
2012	47	38	40	30	36	32	38	28	20	42	35	32	418	**35**
2011	46	103	40	32	36	35	42	29	24	34	39	63	523	**44**
2010	40	48	27	31	23	39	31	30	43	36	34	68	450	**38**
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	71	50	53	45	43	34	57	53	39	56	70	63	634	**53**
10 YR AVG	**56**	**61**	**45**	**36**	**38**	**36**	**37**	**36**	**33**	**43**	**42**	**60**	**522**	

TOTAL HWY. LIGHTING -- MOTORIST CAUSED DAMAGE – BY YEAR														
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**TOTAL**	**MO. AVG**
2014	70	37	29	16	24	31	20	31	19	8	21	25	331	**28**
2013	44	46	31	20	19	27	22	15	20	26	22	43	335	**28**
2012	36	38	25	18	28	26	35	25	24	31	31	35	352	**29**
2011	51	40	19	32	28	21	26	21	17	25	22	36	338	**28**
2010	34	28	29	22	15	30	21	17	13	26	31	58	324	**27**
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	60	27	25	28	22	26	20	18	21	29	44	44	364	**30**
10 YR AVG	**51**	**41**	**28**	**24**	**22**	**26**	**24**	**23**	**21**	**24**	**26**	**47**	**357**	

These numbers do not include the Extra Systems, which has an additional average of 6 tickets per year.

TOTAL SURVEILLANCE SYSTEM -- MOTORIST CAUSED DAMAGE – BY YEAR														
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**TOTAL**	**MO. AVG**
2014	30	20	11	10	4	8	1	3	3	4	4	10	108	**9**
2013	5	10	1	5	7	5	4	7	6	8	5	8	71	**6**
2012	16	5	2	4	3	6	5	8	5	4	7	10	75	**6**
2011	10	12	7	8	5	3	3	5	1	4	3	5	66	**6**
2010	9	12	2	4	2	3	3	5	3	2	3	10	58	**5**
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	17	5	10	10	4	5	5	11	7	2	7	8	91	**8**
10 YR AVG	**14**	**11**	**6**	**6**	**4**	**5**	**5**	**6**	**5**	**4**	**5**	**8**	**77**	

TOTAL ADVANCED STSTEM -- MOTORIST CAUSED DAMAGE – BY YEAR														
	JAN	**FEB**	**MAR**	**APR**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**	**TOTAL**	**MO. AVG**
2014	2	3	0	0	8	1	1	2	1	2	4	6	30	**3**
2013	0	2	1	2	0	0	2	0	1	3	0	2	13	**1**
2012	4	3	0	0	2	1	3	1	0	0	1	3	18	**2**
2011	1	5	3	3	2	3	3	3	1	3	3	2	32	**3**
2010	4	5	1	2	3	6	5	2	0	1	4	3	36	**3**
5 YR AVG	**2**	**4**	**1**	**1**	**3**	**2**	**3**	**2**	**1**	**2**	**2**	**3**	**26**	

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SECTION 2 – SPECIAL PROVISIONS

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 be used for the installation of new loop dives in asphalt shoulders along the interstate in District One. 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 shoulder, if required shall be prepared as per Article 358.

The installation of the loop dive shall require an 18" wide section of asphalt the width of the shoulder and aggregate base material down to a depth required for the installation of the new loop dive unit duct to exit the shoulder area at approximate 30"depth. The contractor shall replace the aggregate base material and asphalt surface in kind with what was existing bringing the surface to a smooth grade and proper crown.

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:

Revise Article 810.04 of the Standard Specifications to read:

> "Installation. All underground conduit shall have a minimum depth of 30-inches (700 mm) below the finished grade."

Add the following to Article 810.04 of the Standard Specifications:

"All metal conduit installed underground shall be Rigid Steel Conduit unless otherwise indicated on the plans."

Add the following to Article 810.04 of the Standard Specifications:

"All raceways which extend outside of a structure or duct bank but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum or 300 mm (12") or the length shown on the plans beyond the structure or duct bank. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped. The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap. The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125") thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring."

Add the following to Article 810.04(c) of the Standard Specifications:

"Coilable non-metallic conduit shall be machine straightened to remove the longitudinal curvature caused by coiling the conduit onto reels prior to installing in trench, encasing in concrete or embedding in structure. The straightening shall not deform the cross-section of the conduit such that any two measured outside diameters, each from any location and at any orientation around the longitudinal axis along the conduit differ by more than 6 mm (0.25")." The longitudinal axis of the straightened conduit shall not deviate by more than 20 mm per meter (0.25" per foot" from a straight line. The HDPE and straightening mechanism manufacturer operating temperatures shall be followed.

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."

Revise Article 810.04 of the Standard Specifications to read:

> "Installation. All underground conduit shall have a minimum depth of 30-inches (700 mm) below the finished grade."

Add the following to Article 810.04 of the Standard Specifications:

> "All metal conduit installed underground shall be Rigid Steel Conduit unless otherwise indicated on the plans."

Add the following to Article 810.04 of the Standard Specifications:

> "All raceways which extend outside of a structure or duct bank but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum or 300 mm (12") or the length shown on the plans beyond the structure or duct bank. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped. The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap. The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125") thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring."

Add the following to Article 810.04(c) of the Standard Specifications:

"Coilable non-metallic conduit shall be machine straightened to remove the longitudinal curvature caused by coiling the conduit onto reels prior to installing in trench, encasing in concrete or embedding in structure. The straightening shall not deform the cross-section of the conduit such that any two measured outside diameters, each from any location and at any orientation around the longitudinal axis along the conduit differ by more than 6 mm (0.25")." The longitudinal axis of the straightened conduit shall not deviate by more than 20 mm per meter (0.25" per foot" from a straight line. The HDPE and straightening mechanism manufacturer operating temperatures shall be followed.

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 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”

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 or 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, XLP, 3/C NO. 2, 1/C NO. 6 XLP GREEN
GE02 ELECTRIC CABLE ASSEMBLY, XLP, 3/C NO. 4, 1/C NO. 6 XLP 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, XLP
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, XLP, 1/C UP to No. 6
GE04 ELECTRICAL CABLE, XLP, 1/C No. 4 to No.1
GE05 ELECTRICAL CABLE, XLP, 1/C from No. 1/0 to No. 2/0
GE06 ELECTRICAL CABLE, XLP, 1/C from No. 3/0 to No. 4/0
GE07 ELECTRICAL CABLE, XLP, 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 confirm 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 funs 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. Wired 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 no-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.

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	8.3µm (nominal)
Numerical Aperture	0.14
Zero Dispersion Wavelength	1300-1322 nm
Zero Dispersion Slope	0.092 ps/(nm²*km)(maximum)
Cladding Diameter	125.0 ± 0.7 µm
Core-Clad Concentricity	0.05 µm maximum
Cladding Non-Circularity	1% maximum
Coating Diameter	245 ± 10 µm
Coating-Cladding Concentricity	12 µm maximum
Mode Field Diameter	9.2 µm ± 0.4 µm at 1310 nm
Mode Field Diameter	10.4 µm ± 0.5 µm 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 -58º to F to +158º F (-50º C to +70º C)

Installing temperature: -22º F to + º158 Fº (-30º C to +70º C)

Operating temperature -40º F to + º158 Fº (-40º C to +70º 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-enterable. 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 -18º and 38ºC (0 and 100º 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 -18º and 38ºC (0 and 100º 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 or 24 SM fiber optic cable, splice closure, pigtails and patch cords, testing, and documentation to connect a surveillance cabinet, lighting cabinet, pump station or other equipment as approved by the Engineer 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 24 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 24 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 24 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 Enclosure, 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 ASTMD 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

ATSM TEST	Description	Valves HDPE
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 Install 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. 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

Item	Articles/Section
(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 be applicable to all generators and shall not be limited to generators at the Pump Stations, Base Stations, Traffic Systems Center (TSC), Fiber Huts, Moveable Bridges and two (2) in Contract Spare Parts.

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

COOLING SYSTEM ----------SATISFACTORY – UNSATISFACTORY -- COMMENTS

1. RADIATOR/HEAT EXCHANGER
2. COOLANT
3. HOSES AND CONNECTORS
4. FAN DRIVE PULLEY AND FAN
5. FAN BELTS
6. JACKET WATER HEATER
7. WATER PUMP
8. THERMOSTATS

FUEL SYSTEM

9. FUEL TANK
10. WATER TRAP SEPARATOR
11. FUEL LINES & CONNECTORS
12. GOVERNOR & CONTROLS
13. FUEL FILTERS-PRIM./SEC.
14. FUEL PRESSURE

AIR INDUCTION AND EXHAUST SYSTEM

15. AIR FILTER
16. AIR FILTER SERVICE
17. INDICATOR
18. AIR INLET SYSTEM
19. TURBOCHARGER
20. EXHAUST MANIFOLD
21. EXHAUST SYSTEM
22. VALVES & VALVE ROTATORS RECOMMEND LOAD BANK ☐ YES ☐ NO

LUBE OIL SYSTEM

23. OIL
24. OIL FILTERS
25. OIL PRESSURE
26. CRANKCASE BREATHER
27. S-O-S

STARTING SYSTEM

28. BATTERIES
29. BATTERIES-SPECIFIC GRAVITY
30. BATTERY CHARGER
31. STARTING MOTOR
32. ALTERNATOR

ENGINE MONITORS AND SAFETY CONTROLS

33. GAUGES
34. SAFETY CONTROLS
35. REMOTE ANNUN./ALARMS

GENERATOR

36. BEARINGS
37. SLIP RINGS & BRUSHES
38. SPACE HEATERS
39. VIBRATION ISOLATORS

CONTROL PANEL

40. START CONTROLS-MAN./AUTO
41. VOLTMETER

42. AMMETER
43. FREQUENCY METER
44. CIRCUIT BREAKER
45. AUTO TRANSFER SWITCH

GAS ENGINE

46. GAS LINES & CONNECTORS
47. CARBURETOR & LINKAGE
48. MAGNETO/DISTRIBUTOR
49. IGNITION SYSTEM
50. SPARK PLUGS

MEGOHMETER TEST

51. MAIN STATOR
52. MAIN ROTOR
53. EXCITER STATOR
54. EXCITER ROTOR

LOAD BLANK TEST

55. REGULATOR MFG. _____
56. EACH OF THE SPECIFIED LOADS SHALL BE TESTED FOR A HALF HOUR.
57. REGULATOR MODEL _____
58. HOUR METER START _____ STOP _____
59. RACK SETTING _____
60. VOLTAGE STABILITY _____

61. PERCENT OF LOAD	0%	25 %	50 %	75 %	100 %					
62. KW METER										
63. VOLTMETER L1 TO L2										
64. VOLTMETER L2 TO L3										
65. VOLTMETER L3 TO L										
66. AMMETER L1										
67. AMMETER L2										
68. AMMETER L3										

69. FREQUENCY METER-HZ										
70. ELAPSED TIME METER-HOURS										
71. ENGINE SPEED-RPM										
72. LUBE OIL PRESSURE-PSI										
73. WATER TEMPERATURE (F)										
74. FUEL OIL PRESSURE-PSI										
75. AMBIENT TEMPERATURE (F)										
76. LUBE OIL TEMPERATURE-IN										
77. 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 foe 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.

Automatically stop engine and observe for proper shutdown.

1. Automatic Transfer Switches	Observe, Work, Clean
2. Contracts	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: _____ _____

Form GIG1: Rev. 6/06

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–GJ03 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**:**

GJ02 JUNCTION BOX, STAINLESS STEEL, UP TO 6 INCH DEPTH
GJ03 JUNCTION BOX, STAINLESS STEEL, 8 INCH DEPTH
of the size indicated, which shall be payment in full for the work as described herein.

GLH1-GLH3 Labor Hours

Description. This item shall consist of providing a fixed hourly rate of labor for qualified personnel to perform work within District 1 on any system at any location as approved by the Engineer. Bid price hourly rate must be inclusive of all overhead, profit and all other costs not specified herein. Hours of work shall only be counted for actual work performed. The hourly rate shall include the equipment and test instruments to perform work. The Contractor shall submit a fixed hourly rate that will be utilized for any project or work under this contract.

Union Certified Electrician/Journeyman or equivalent to troubleshoot, repair, remove or install electrical equipment in accordance with NEC 2014.

IT Support to troubleshoot, modify, program and upgrade the I-NET, EMCMS, EMCIT/Issuetrak, network, and other IT based technologies services that have been specified herein article 9.0 for the applicable equipment.

Maintenance Helper or equivalent must be proficient in MS office Suite, Access to perform work entering data into spreadsheets, fiber cable management and scanning documentation.

Method of Measurement. The measurement for payment in Hour increments shall be made for labor performed as directed and approved by the Engineer shall be counted as a unit for payment.

Basis of Payment. This item will be paid at the contract unit price per Hour for:

GLH1 Certified Electrician/Journeyman

GLH2 IT Support

GLH3 Maintenance Helper

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 PUMP, CALCIUM CHLORIDE, 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–GTC2 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

GTC1 TRAFFIC CONTROL SINGLE LANE
GTC2 TRAFFIC CONTROL TWO LANES

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.

GU01–GU03 UNIDUCT

Description. This item shall consist of furnishing, installing splicing, connecting, and testing of electric cable in unit duct with warning tape 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. Article 810.04 shall apply for unit duct and warning tape installation.

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 XLP INSULATED CABLES, 3/C NO.6 & 1/C NO.8 GREEN, 1”
GU02 UNIDUCT, WITH XLP INSULATED CABLES, 3/C NO.4 & 1/C NO.6 GREEN, 1 ¼”
GU03 UNIDUCT, WITH XLP 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 VENDOR BUDGETARY ALLOWANCE, 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 VENDOR BUDGETARY ALLOWANCE, 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–GWR2WELDING 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 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 luminaires(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 and 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 Bronzetone 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 System in Volume 1.

Locations. Work shall be performed at the following locations:

Year 2016:

L1385, I 290 @ Westchester Blvd, Cab. S

L1445, I 290 @ Mill Rd, Cab. F

L1455, I 290 @ I 290/ I 355 @ Central Ave, Cab. H

L1458, I 290/ I 355 @ US 20, Cab. I

Year 2017:

L1460, I 290 @ IL 19, Cab. J

L1103, I 94 (US 41) @ Clavey Rd, Cab. T

L2243, US 41 @ West Park Ave, Cab. LP

L0703, I 80 @ IL 43, Cab. I

Year 2018:

L0325, I 55 @ IL 126, Cab. L

L0335, I 55 @ IL 52, Cab. N

L0713, I 55 @ W of 88th Ave, Cab. D

L0717, I 55 @ E of 104th Ave, Cab. G

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 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 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” as shown on the plan, 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 BE – 235 or latest 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.

LDS2 ON/OFF SWITCH

Description. This item shall consist of furnishing and installing ON/OFF switch, the removal of old switch is incidental, as directed by the Engineer.

Materials. The ON/OFF switch shall be 600 volt, 2-pole, 3-pole, 2- Way or 3- Way, up to 20-ampere, having a UL listed interrupting rating of not less than 20,000 rms symmetrical amperes at rated voltage and suitable for building.

All electrical materials shall conform to Article 1065, latest version of Standard Specification for Road and Bridge Construction.

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 ON/OFF 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 ON/OFF Switch for 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 an ON/OFF SWITCH, which shall be payment in full for the work specified herein.

LDS3 MOTION SENSOR

Description. This item shall consist of furnishing and installing a Motion Sensor with visual indicator and hardware as specified herein. All required hardware is incidental to this pay item, however, the conduit and wiring, shall be paid under a separate pay item.

Materials. The Motion Sensor shall be ceiling mount H-Moss Adaptive Technology with passive infrared to cover up to 1,500 sq. ft. areas, equivalent to or better than Hubbell model ATP1500C. It should be able to study their environment and automatically adjust the time delay and sensitivity to optimize the sensor's performance for specific application.

The motion sensor must be used in conjunction with a control unit. The control units provide a 24 volts dc power supply for one (1) to three (3) sensor. The control unit must be selected for the operating voltage of application from 120 V to 240 V, 60 Hz.

Transportation. The Contractor shall transport, handle and store (as applicable) the Motion Sensor in complete conformance with the manufacturer's recommendations.

Installation. The Motion Sensor shall be ceiling mounted as indicated on the contract drawing or as directed by the Engineer, if applicable, AAR Add-A-Relay. The installation shall be complete with necessary conduit and cable (paid under separate pay item) and connected to the applicable circuit.

The Contractor shall mount to a junction box for hard ceiling; attach to cover plate by using machine screws and punching a small hole through the ceiling tile for the sensor wires or using threaded mounting post then running sensor wires through the center of the post.

The Contractor shall use NEMA 4X enclosure cover "ACIPE" for the sensor and install the control unit inside the NEMA 4X box for the wet locations. 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.

Method of Measurement. A Motion Sensor, 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 MOTION SENSOR which shall be payment in full for the item 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. Excavation in rock will be paid as specified in Section 502.12 for Excavation for Structures. 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 1006.08, 1006.09, 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 incidental to 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.

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 Contract Spare Parts 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.

The removal of breakaway couplings and installation or replacement with breakaway device (T-Base) is included part of the installation procedure and it will not be paid separately.

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 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 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

appurtances 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 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/l0 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 appurtances, 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: UL50

    Note: 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.

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 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 mm^2, 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 YEARLY LIGHT TOWER, IN PLACE, CLEAN AND PAINT

The Contractor shall sand blast, prime a tower, standing in place on the foundation with luminaire ring assembly and hood, either complete or part of, as directed by the Engineer. 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.

The work involves the surface preparation and application of coating materials on existing steel light towers greater than 80 ft. high. The Contractor shall provide all management, supervisory, administration, quality control personnel, labor forces and all other services required to carry out the surface preparation work, coating operations, including the furnishing, handling and removal of spent abrasive material, if required and all testing and reporting as specified herein.

Tower Number, Luminaire Quantity Decals, and Accident Reference Marker Decals.

All identification decals shall be removed prior to the start of work and replaced after the finish coat has fully dried. Removal of all decals, purchase of new decals, and installation of new decals shall be incidental to this pay item. Following sufficient curing of the finish coat, new tower number and luminaire quantity decals 8 inch x 9 inch shall be affixed to the tower at locations where the existing decals were removed during the surface preparation process. The Contractor shall schedule the decal replacement six months from the time the tower was painted, allowing sufficient time for the finish coat to dry.

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, and removal of all debris from the work site.

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.

The scaffolding, ladders, etc., required for surface preparation and/or painting shall be designed for loads not less than those established by the State of Illinois

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 exceeds 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 specified and approved in writing by the Engineer . 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.

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.

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.

Testing. The Engineer shall furnish to the Contract, upon the transmittal of the authorization of work, the required tests for the tower cleaning and painting.

Test Equipment to be furnished and used by the Contractor:

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

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.
Primer: The primer shall be applied to the entire designated area of each tower and be a Keeler & Long Tri-Polar Primers KL6040 series or equivalent approved by the Engineer.

Finish Coat: The finish shall be applied to the entire designated area of each tower and be a

Keeler & Long Anodic Self-Priming Paint KL4400 Series or equivalent approved by the Engineer.

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.

Documentation of Work. The Contractor shall document testing information and provide the Engineer a weekly progress report on an Excel spreadsheet for each work authorization. Each tower shall be reported separately. The Contractor shall scan the Excel spreadsheet and the general billing logs to the Engineer daily (if requested by the Engineer) or weekly, for each authorization letter. The format of the spreadsheet shall be furnished to the Contractor upon the authorization of work.

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, 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 with applicable documentation, 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 the foundation all during the same work day as designated by the Engineer. This pay item shall also include the removal of towers found unsafe by IDOT inspectors. Clearing the site for safety, including the removal of damaged equipment, site restoration, and 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. The electric power cables shall be reconnected so that tower becomes operational that evening without interruption.

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.

The light tower shall be reinstalled immediately after inspection and/or modification work the same day on the foundation.

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.

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) foot 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 (up to) four, four (4) foot 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 up to six (6), four (4) foot 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 with lamp 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 equal or better than Lithonia Lighting model series “FHE” and 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, number of lamps 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, TWO LAMPS, 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, TWO LAMPS, INSTALL ONLY, complete in place, which shall be payment in full for the work as described herein.

LU14 LUMINAIRE, WALL, CEILING, UNDERPASS OR TUNNEL, INSTALL ONLY

Description. This item shall consist of retrieving from Owner's storage facility, loading, transporting, and installing a wall, ceiling, 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, CEILING, UNDERPASS OR TUNNEL, INSTALL ONLY, which shall be payment in full for the complete installation as specified herein.

LU15 LUMINAIRE, HPS, POLE

Description. This item shall consist of furnishing and installing, a HPS, luminaire, with lamp and photocell, if specified, for light pole, 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 LIGHT POLE, of the wattage and operating voltage specified, which shall be payment in full for the item as specified herein.

LU16 LUMINAIRE, HPS, TOWER

Description. This item shall consist of furnishing and installing, a HPS, luminaire, with lamp and photocell, if specified, for tower, 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 TOWER, of the wattage and operating voltage specified, which shall be payment in full for the item as specified herein.

LU17 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 LUMINAIARE, METAL HALIDE, which shall be payment in full for the work, specified herein and as directed by the Engineer.

LU18 EMERGENCY OR 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.

SPECIAL PROVISIONS FOR LUMINAIRES

These special provisions apply to the 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 Ballast Wattage	**Maximum Ballast Regulation**
750	25%
400	25%
310	26%
250	22%
150	22%

For this measure, regulation shall be defined as the following:

$$Percentage\ Ballast\ Regulation = \frac{W_{LampH} - W_{lampL}}{W_{lampN}} \times 100$$

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 Ballast Wattage	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:

$$Percentage\ Ballast\ Losses = \frac{W_{line} - W_{lamp}}{W_{lamp}} \times 100$$

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 Tile washing, shall be ONERESTORE, made by EaCo CHEM Inc., or equal. The Contractor shall follow all manufacturer instructions for application and use of the product.

The technical data is as follows:

Appearance:	Liquid	Specific Gravity:	1.117
Color:	Yellow to Amber	Solubility in Water:	complete
Odor	Mild	Biodegradable:	100%
Flash Point:	212° F @ 760 mm Hg	Personal Protection:	B*

B* = Chemical Resistant and goggles

Test each type of surface before overall application to ensure suitability and desired results. Apply test areas according to the manufacturer's recommendations.

Cleaning. 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. Block any and all drains where present and setup water recovery to recover waste water.

Use pressurized water to rinse the tiles, then spray the chemical detergent and scrub clean, high pressure wash surface until clean. use soft bristled brush or broom for extra washing as applicable, and rinse clean with a pressure water and recover waste water.

The Contractor shall recover waste water and detergent chemical, the recovered waste water shall be picked up after completion by an environmental vacuum truck and shall be disposed of in accordance with IEPA rules and guidelines as specified herein.

The Contractor shall provide the traffic control for lanes and ramps as per the Bureau of Traffic Expressway closure guidelines for Hubbard's cave and protection of workers and motorists. as part of this pay item.

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.

LW02 WASH & RELAMP HUBBARD'S CAVE LUMINAIRES

Description. This item shall consist of group washing and cleaning the glass inside and outside of the fixture using non-abrasive cleaning solution as per manufacturer specification and relamp as specified herein.

The Contractor shall wash lens inside and outside and replace the lamp in accordance with the luminaire manufacturer specifications. Work shall be documented on Log Form L-LR. Each fixture opened for washing shall be securely re-locked. If any decals are torn or missing, including the mounting bracket, they shall be replaced as part of this program.

- The Contractor (or Sub-Contractor) shall list all work scheduled on the Daily Agenda.
- The Contractor shall obtain lane closure and work approval from the IDOT Bureau of Traffic for expressway locations scheduled on the Daily Agenda. The Engineer may suspend work operations should a required lane or shoulder closure not be obtained, or if proper traffic plan control is not used.
- A work crew person shall use Form S-1 to record required information at the time of work. Re-copied or summarization of the original sheets in the office will not be accepted.

- The work crew foreman shall notify the IDOT Engineer on the day.

- While performing the group wash and relampwork, the crew shall also conduct an overall inspection of each installation to ensure that each installation is maintained in a safe and proper operating condition as originally designed or as subsequently modified by the Department. Items to be inspected include: the general condition of the fixture (i.e., mounting and ballast), lamp lenses and hinges, conduit and decals. All observed deficiencies shall be recorded on Log Form S-1. All signed original log forms shall be submitted with the respective invoice(s).

Work Description.

Luminaire Cleaning. Wash, rinse and wipe dry both sides of the reflector and clean any dirt and debris from on or around the fixture. Do not wash or tamper with the fixture refractor when washing the luminaire.

Lamp Replacement. Replace lamps in all fixtures with new lamps of the same type and wattage or an approved replacement. Close and lock each fixture after washing and lamp replacement.

Miscellaneous Work. All identification decals shall be cleaned or replaced if torn, non-legible or missing.

Disposal. All used lamps shall be disposed of in accordance with the U.S. Environmental Protection Agency (EPA) directives and through a certified EPA disposal company. The old lamps shall be collected and boxed according to the disposal agency's recommendations. The Contractor shall provide all documentation necessary for submittal to all applicable agencies for the disposal of the various types of lamps and their quantities.

Method of Measurement. Luminaires shall be counted, each, fixture washed and relamped.

Basis of Payment. This item shall be paid at the contract unit price each for LUMINAIRE, WASH and RELAMP, which shall be payment in full for all work specified herein.

LWR1 – LWR4 WASH AND RELAMP, LUMINAIRES

Description. The Contractor shall wash lens in accordance with the luminaire manufacturer specifications, remove existing lamp and replace with new lamp, at highway and maintenance yard facility lighting locations as designated by the Engineer. This item shall include the price of the new lamp as specified. The Engineer will determine the quantities and locations where re-lamp work is to be authorized each year. Work shall be documented on Log Form L-LR. Submittals and work procedures will be discussed at a Contractor and Department procedures meeting.

The fixture reflector shall not be handled when washing glass or replacing lamp. Each fixture opened for washing shall be securely re-locked. If any decals are torn or missing, including the mounting bracket, they shall be replaced as part of this program.

- The Contractor shall provide an overall program work schedule for each period.
- Upon receipt of an authorized letter for an individual program, and prior to the beginning of work, the EMC shall provide documentation of the requisition of the lamps and the vendor invoice. The invoice should refer to the EMC Contract year.
- The Contractor (or Sub-Contractor) shall list all work scheduled for specific locations on the Daily Agenda.
- The Contractor shall obtain lane closure and work approval from the IDOT Bureau of Traffic for expressway locations scheduled on the Daily Agenda. The Engineer may suspend work operations should a required lane or shoulder closure not be obtained, or if proper traffic plan control is not used.
- A work crew person shall use Form S-1 to record required information at each site location at the time of work. Re-copied or summarization of the original sheets in the office will not be accepted.
- After completing the FIRST DAY'S work on a new SECTION of highway lighting, the Foreman shall fax Form S-1 to the BEO Field Office for Engineer approval.
- The IDOT inspectors will randomly inspect work in progress and sign the ORIGINAL Log, Form S-1.
- The work crew foreman shall notify the IDOT Engineer on the day, when the work will be completed for a section of the highway; Ike, Kennedy, etc. The foreman shall fax the copy of the S-1 log, for the last location in that section, to the Engineer, advising the completion of that section and being ready for inspection.
- While performing the wash and relamp work, the crew shall also conduct an overall inspection of each installation to ensure that each installation is maintained in a safe and proper operating condition as originally designed or as subsequently modified by the Department. Items to be inspected include: the general condition of the fixture (i.e., mounting and ballast), lamp lenses and hinges, conduit and decals. All observed deficiencies shall be recorded on Log Form S-1. All signed original log forms shall be submitted with the respective invoice(s).
- The IDOT Inspector will approve work or prepare a corrective work list, noting work deficiencies that must be corrected prior to invoicing.

Underpass, Wall and Roof Mounted Fixtures: Wash, rinse, wipe dry both sides of the glassware and clean any dirt and debris from on or around the fixture and replace the old lamp with new one of the same type and wattage.

Materials. All fixtures scheduled for group wash and relamping all have lamps replaced with a new lamp of the same type and wattage. All lamps used for group replacement shall be subject to approval by the Engineer.

Work Description.

Luminaire Cleaning. Wash, rinse and wipe dry both sides of the reflector and clean any dirt and debris from on or around the fixture. Do not wash or tamper with the fixture refractor when washing the luminaire.

Lamp Replacement. Replace lamps in all fixtures with new lamps of the same type and wattage or an approved replacement. Close and lock each fixture after washing and lamp replacement.

Miscellaneous Work. All identification decals shall be cleaned or replaced if torn, non-legible or missing.

Disposal. All used lamps shall be disposed of in accordance with the U.S. Environmental Protection Agency (EPA) directives and through a certified EPA disposal company. The old lamps shall be collected and boxed according to the disposal agency's recommendations. The Contractor shall provide all documentation necessary for submittal to all applicable agencies for the disposal of the various types of lamps and their quantities.

Method of Measurement. Luminaires shall be counted, each, fixture washed, old lamp removed and new lamp replaced.

Basis of Payment. This item shall be paid at the contract unit price each for LUMINAIRE, WASH AND RELAMP, which shall be payment in full for the types of lamps listed below, and all work specified herein.

LWR1 Wash & Relamp, HPS Lamps

LWR2 Wash & Relamp, LPS Lamps

LWR3 Wash & Relamp Fluorescent Lamps

LWR4 Wash & Relamp Metal Halide Lamps

LUMINAIRE, LED
Effective: July 1, 2015

Description.

This work shall consist of furnishing and installing LED luminaire as shown on the plans, as specified herein.

General.

The luminaire including the housing, driver and optical assembly shall be assembled in the U.S.A. The luminaire shall be assembled by and manufactured by the same manufacturer. The luminaire shall be in compliance with ANSI C136.37. LED light source(s) and driver(s) shall be RoHS compliant.

Submittal Requirements.

The Contractor shall submit, for approval, an electronic version of all associated luminaire IES files, AGi32 files and the TM-21 or TM-28 calculator spreadsheet with inputs and reports associated with the project luminaires. The Contractor shall also provide (as a minimum) an electronic (PDF) version of each of the following manufacturer's product data for each type of luminaire:

1. Descriptive literature and catalogue cuts for luminaire, LED driver, and surge protection device.

2. LED drive current, total luminaire input wattage and total luminaire current at the system operating voltage or voltage range and ambient temperature of 25 C.

3. LED efficacy per luminaire expressed in lumens per watt (lpw).

4. Initial delivered lumens at the specified color temperature, drive current, and ambient temperature.

5. Computer photometric calculation reports as specified and in the luminaire performance table.

6. TM-15 BUG rating report.

7. Isofootcandle chart with max candela point and half candela trace indicated.

8. Documentation of manufacturers experience and verification that luminaires were assembled in the U.S.A. as specified.

9. Supporting documentation of compliance with ANSI standards as well as UL listing as specified.

10. Supporting documentation of laboratory accreditations and certifications for specified testing as indicated.

11. Thermal testing documents as specified.

12. IESNA LM-79, LM-80 (or LM-84) and TM-21 (or TM-28) reports as specified.

13. Salt fog test reports and certification as specified.

14. Vibration Characteristics Test Reports and certification as specified.

15. Ingress Protection Test Reports as specified.

16. Written warranty.

17. A sample luminaire shall be provided upon request of the Engineer. The sample shall be as proposed for the contract.

Manufacturer Experience.

The luminaire shall be designed to be incorporated into a lighting system with an expected 20 year lifetime. The luminaire manufacturer shall have a minimum of 35 years' experience manufacturing HID roadway luminaires and shall have a minimum of seven (7) years' experience manufacturing LED roadway luminaires. The manufacturer shall have a minimum of 25,000 total LED roadway luminaires installed on a minimum of 100 separate installations, all within the U.S.A.

Housing.

Material. The luminaire shall be a single device not requiring on-site assembly for installation. The power supply for the luminaire shall be integral to the unit.

Finish. Painted or finished luminaire surfaces exposed to the environment shall exceed a rating of six, according to ASTM D1654, after 1000 hours of ASTM B117 testing. The coating shall exhibit no greater than 30% reduction of gloss, according to ASTM D523, after 500 hours of ASTM G154 Cycle 6 QUV® accelerated weathering testing.

Unless otherwise indicated in the plans, the luminaire color shall be grey.

The luminaire shall slip-fit on a mounting arm with a 2" diameter tenon (2.375" outer diameter), and shall have a barrier to limit the amount of insertion. The slip fitter clamp shall utilize four (4) bolts to clamp to the tenon arm. The luminaire shall be provided with a leveling surface and shall be capable of being tilted ±5 degrees from the axis of attachment in 2.5 degree increments and rotated to any degree with respect to the supporting arm.

The housing shall be designed to prevent the accumulation of water, ice, dirt and debris and to ensure maximum heat dissipation.

The effective projected area of the luminaire shall not exceed 1.6 sq. ft.

The total weight of the luminaire(s) and accessories shall not exceed 75 pounds.

A passive cooling method with no moving, rotating parts, or liquids shall be employed for heat management.

The luminaire shall include a fully prewired, 7-pin twist lock ANSI C136.41-compliant receptacle. Unused pins shall be connected as directed by the Manufacturer and as approved by the Engineer. A shorting cap shall be provided with the luminaire.

Vibration Characteristics. All luminaires shall be vibration tested and pass ANSI C136.31 requirements. Luminaires shall be rated for "3G" peak acceleration. Vibration testing shall be run using the same luminaire in all three axes.

Labels and Decals. All luminaires shall have labels in accordance with ANSI C136.15 for an external label, and ANSI C136.22 for an internal label.

The luminaire shall be Listed for wet locations by a U.S. Occupational Safety Health administration (OSHA) Nationally Recognized Testing Laboratory (NRTL) and shall be in compliance with UL 8750 and UL 1598. It shall be identified as such by the NRTL tag/sticker on the inside of the luminaire.

Hardware. All hardware shall be stainless steel. Captive screws are required on any components that require maintenance after installation.

Internal Luminaire Electrical Connections. Quick connect/disconnect plugs shall be supplied between the discrete electrical components within the luminaire such as the driver, surge protection device and optical assembly for easy removal. The quick connect/disconnect plugs shall be operable without the use of tools while wearing insulated gloves.

Provisions for any future house-side external or internal shielding should be indicated along with means of attachment.

Circuiting shall be designed to minimize the impact of individual LED failures on the operation of the other LED's.

Wiring. Wiring within the electrical enclosure shall be rated at 600v, 105°C or higher.

Driver.

The driver shall be integral to the luminaire. Integral driver components shall be mounted in the rear of the luminaire on the inside of a removable door or on a removable mounting pad. Driver wiring shall be connected by means of plugs. Upon unplugging the driver wiring the entire driver assembly shall remove for maintenance. The removable door or pad shall be secure when fastened in place and all individual components shall be secured upon the removable element. Each component shall be readily removable from the removable door or pad for replacement.

The plugs shall be keyed and shall be operable without the use of special tools by insulated, gloved hands

The driver shall be installed in a manner to keep it mechanically separated from the LED array heat sink.

The driver shall tolerate indefinite open and short circuit output conditions without damage.

Ingress Protection. The driver Ingress Protection (IP) rating as defined in the ANSI/IEC 60529 standard shall have an IP66 rating.

Input Voltage. The driver shall be suitable for operation over a range of 120 to 277 volts or 347 to 480 volts as required by the system operating voltage.

Operating Temperature. The driver shall have an operating ambient temperature range of -40ºC to 70ºC.

Driver Life. The driver shall provide a life time of 100,000 hours at 25° C ambient.

Safety/UL. The driver shall be UL Listed under standard UL 1012.

Power Factor. Drivers shall maintain a power factor of 0.9 or higher and total harmonic distortion of less than 20%.

Driver efficiency. Efficiency of the driver is defined by the ratio of output power and input power. The driver shall deliver a maximum efficiency of >90% at maximum load and an efficiency of >85% for the driver operating at 50% power.

Electrical Interference. The driver shall meet the Electromagnetic Compatibility (EMC) requirements per FCC Title 47 Code of Federal Regulations (CFR) Part 15 Class A.

Thermal Fold Back. The driver shall reduce the current to the LED module if the driver is overheating due to abnormal conditions.

Dimming. The driver shall have dimming capability. The driver shall accept a dimming control signal that is compliant with the 0-10V protocol.

Leakage current. The driver shall comply with safety standards in accordance with IEC 61347-1.

The Surge Protection Device shall be UL 1449 labeled as Type 4 and be an integral part of the luminaire. The SPD shall be compliant with ANSI C136.2-2014 (Draft).

Thermal performance

Thermal Testing shall be provided as defined by ANSI/UL 1598. The luminaire shall start and operate in the ambient temperature range specified in the driver section. The maximum rated case temperature of the driver, LEDs, and other internal components shall not be exceeded when the luminaire is operated in the ambient temperature range specified.

Mechanical design of protruding external surfaces (heat sink fins) shall facilitate hose-down cleaning and discourage debris accumulation. Testing shall be submitted (whenever is available) to show the maximum rated case temperature of the driver, LEDs, and other internal components are not exceeded when the luminaire is operated with the heat sink filled with debris.

LED Optical Assembly

The LED optical assembly shall be a scalable array consisting of discrete LED panels or modules. Each panel or module shall have a minimum IP rating of 66.

The optical assembly shall utilize high brightness, long life, minimum 70 CRI, 4,000K color temperature (+/-300K) LEDs binned in accordance with ANSI C78.377. Lenses shall be UV-stabilized acrylic or glass.

Lumen depreciation at 50,000 hours of operation shall not exceed 15% of initial lumen output at the specified LED drive current and an ambient temperature of 25° C.

The luminaire may or may not have a glass lens over the LED modules. If a glass lens is used, it must be a flat lens. Material other than glass will not be acceptable.

The assembly shall have individual serial numbers or other means for manufacturer tracking.

Photometric Performance.

Luminaires shall be tested according to IESNA LM-79. This testing shall be performed by a test laboratory holding accreditation from the National Institute of Standards and Technology (NIST) National Voluntary Laboratory Accreditation Program (NVLAP) for the IESNA LM-79 test procedure.

Data reports as a minimum shall yield an isofootcandle chart, with max candela point and half candela trace indicated, maximum plane and maximum cone plots of candela, a candlepower table (house and street side), a coefficient of utilization chart, a luminous flux distribution table, spectral distribution plots, chromaticity plots, and other standard report outputs of the above mentioned tests.

Lumen maintenance shall be measured for the LEDs according to LM-80 or for the luminaires according to LM-84. The LM-80 report shall be based on a minimum of 6,000 hours, yet 10,000 hour reports shall be provided for luminaires where those tests have been completed.

Lumen Maintenance Projection.

The luminaire shall have long term lumen maintenance documented according to IESNA TM-21 or IESNA TM-28. Ambient temperature shall be 25^0 C.

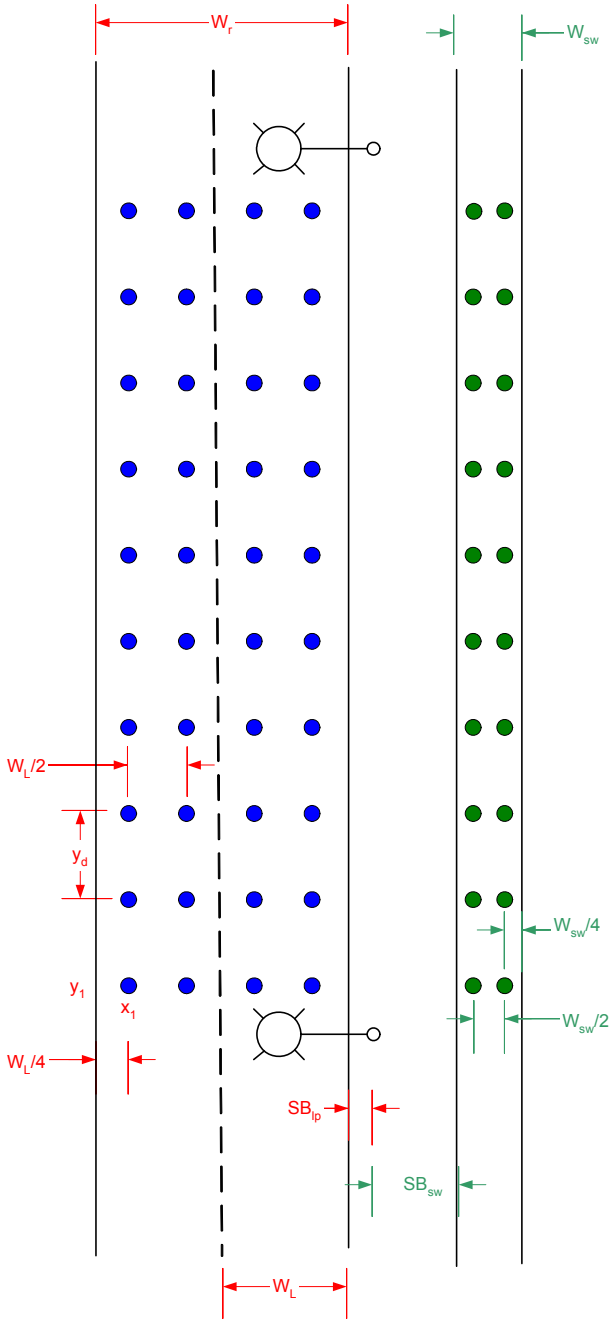
The submitted calculations shall incorporate the light loss factors as indicated the respective performance tables.

Photometric Calculations.

Calculations. Submitted report shall include a luminaire classification system graph with both the recorded lumen value and percent lumens by zone along with the BUG rating according to IESNA TM-15.

Complete point-by-point luminance and veiling luminance calculations as well as listings of all indicated averages and ratios as applicable shall be provided in accordance with IESNA RP-8 recommendations. Lighting calculations shall be performed using AGi32 software with all luminance calculations performed to two decimal places (i.e. x.xx cd/m2). Uniformity ratios shall also be calculated to two decimal places (i.e. x.xx:1). Calculation results shall demonstrate that the submitted luminaire meets the lighting metrics specified in the project Luminaire Performance Table(s). Values shall be rounded to the number of significant digits indicated in the luminaire performance table(s).

All photometry must be photopic. Scotopic or mesopic factors will not be allowed.



W_r = Roadway Width
W_L = Lane Width
W_{SW} = Sidewalk Width
SB_{LP} = Light Pole Set Back
SB_{SW} = Sidewalk Set Back

TABLE and DIAGRAM

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	(ft)
	Number of Lanes	
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	(ft)
	Mast Arm Length	(ft)
	Pole Set-Back From Edge of Pavement	(ft)
LUMINAIRE DATA	Lumens	This is a range
	BUG Rating	
	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	(ft)
	Configuration	Single Sided
	Luminaire Overhang over edge of pavement	(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		
LUMINANCE	Average Luminance, L_{AVE}	Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	(Max)
	Uniformity Ratio, L_{MAX}/L_{MIN}	(Max)
	Veiling Luminance Ratio, L_V/L_{AVE}	(Max)

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

Independent Testing

When a contract has 30 or more luminaires of the same type (distribution type and lumen output/wattage), that luminaire type shall be independently tested, unless otherwise noted. The quantity of luminaires to be tested shall be as specified in the following table.

Contract Quantity	Luminaires to be Tested
1-29	0 (unless otherwise noted)
30-80	2
81-130	3
131-180	4
181-230	5
231-280	6
281-330	7

The Contractor shall coordinate the testing with the contract schedule taking into account submittal, manufacturing, testing, and installation lead-times and deadlines.

The Electrical Engineer shall select from all the project luminaires at the Contractor's or distributor's storage facility, within District 1, the luminaires for testing. In all cases, the selection of luminaires shall be a random selection from the entire completed lot of luminaires required for the contract. Selections from partial lots will not be allowed. An additional luminaire shall also be selected for physical inspection by the Engineer at the District Headquarters. This luminaire will be returned to the Contractor at a later date. This luminaire is in addition to the luminaire required as a part of the submittal process specified elsewhere.

Luminaires shall be tested at a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory approved for each of the required tests. All costs associated with luminaire testing shall be included in the bid price of the luminaire.

The selection of the proposed independent laboratory shall be presented with the information submitted for approval.

The testing performed shall include photometric and electrical testing.

Photometric testing shall be according to IES recommendations and as a minimum, shall yield an isofootcandle chart, with max candela point and half candela trace indicated, an isocandela diagram, maximum planned and maximum cone plots of candela, a candlepower table (House and street side), a coefficient of utilization chart, a luminous flux distribution table, BUG rating report, and complete calculations based on specified requirements and test results.

Electrical testing shall conform to NEMA and ANSI standards and, as a minimum shall include a complete check of wiring connections and a table of characteristics showing input amperes, watts, power factor, total harmonic distortion and LED drive current.

Two copies of the summary report and the test results (including CDROM) shall be certified by the test laboratory and shall be sent by certified mail directly to the Engineer.

To: District Engineer
Attn: Bureau Chief of Traffic Operations
The package shall state “luminaire test reports” and the contract number clearly.

A copy of this material shall be sent to the Contractor and the Resident Engineer at the same time.

Photometric performance shall meet or exceed that of the specified values. If the luminaire does not meet the specified photometric values, the luminaire has failed regardless of whether the test results meet the submitted factory data.

Should any of the tested luminaires of a given type, and distribution fail to satisfy the specifications and perform according to approved submittal information, the luminaire type of that distribution type and wattage shall be unacceptable and be replaced by alternate equipment meeting the specifications with the submittal and testing process repeated in their entirety; or corrections made to achieve required performance.

In the case of corrections, the Contractor shall advise the Engineer of the proposed corrections and shall request a repeat of the specified testing and, if the corrections are deemed reasonable by the Engineer, the testing process shall be repeated in its entirety.

The number of luminaires to be tested shall be the same quantity as originally tested as required in the above table.

Retesting, should it become necessary, shall not be grounds for additional compensation or extension of time

Submittal information shall include a statement of intent to provide the testing as well as a request for approval of the chosen laboratory.

Installation.

Each luminaire shall be installed according to the luminaire manufacturer’s recommendations.

Luminaires which are pole mounted shall be mounted on site such that poles and arms are not left unloaded. Pole mounted luminaires shall be leveled/adjusted after poles are set and vertically aligned before being energized. When mounted on a tenon, care shall be exercised to assure maximum insertion of the mounting tenon. Each luminaire shall be checked to assure compatibility with the project power system. When the night-time check of the lighting system by the Engineer indicates that any luminaires are mis-aligned, the mis-aligned luminaires shall be corrected at no additional cost.

No luminaire shall be installed before it is approved. Where independent testing is required, full approval will not be given until complete test results, demonstrating compliance with the specifications, have been reviewed and accepted by the Engineer.

Pole wiring shall be provided with the luminaire. Pole wire shall run from handhole to luminaire.
Pole wire shall be sized No. 10, rated 600 V, RHW/USE-2, and have copper conductors, stranded in conformance with ASTM B 8. Pole wire shall be insulated with cross-linked polyethylene (XLP) insulation. Wire shall be trained within the pole or sign structure so as to avoid abrasion or damage to the insulation.

Pole wire shall be extended through the pole, pole grommet, luminaire ring, and any associated arm and tenon. The pole wire shall be terminated in a manner that avoids sharp kinks, pinching, pressure on the insulation, or any other arrangement prone to damaging insulation value and producing poor megger test results. Wires shall be trained away from heat sources within the luminaire. Wires shall be terminated so all strands are extended to the full depth of the terminal lug with the insulation removed far enough so it abuts against the shoulder of the lug, but is not compressed as the lug is tightened.

Included with the pole wiring shall be fusing located in the handhole. Fusing shall be according to Article 1065.01with the exception that fuses shall be 6 ampere.

Each luminaire and optical assembly shall be free of all dirt, smudges, etc. Should the optical assembly require cleaning, a luminaire manufacturer approved cleaning procedure shall be used.

Horizontal mount luminaires shall be installed in a level, horizontal plane, with adjustments as needed to insure the optics are set perpendicular to the traveled roadway.

When the pole is bridge mounted, a minimum size stainless steel 1/4-20NC set screw shall be provided to secure the luminaire to the mast arm tenon. A hole shall be drilled and tapped through the tenon and luminaire mounting bracket and then fitted with the screw.

Warranty.

The entire luminaire and all of its component parts shall be covered by a 10 year warranty. Failure is when one or more of the following occur:

1) Negligible light output from more than 10 percent of the discrete LEDs.
2) Significant moisture that deteriorates performance of the luminaire.
3) Driver that continues to operate at a reduced output due to overheating.

The warranty period shall begin on the date of project final acceptance. A copy of the acceptance letter shall be sent to the luminaire manufacturer and luminaire manufacturer's representative by the Contractor upon final acceptance.

The replacement luminaire shall be of the same manufacturer, model, and photometric distribution as the original.

Method of Measurement.

LED Luminaire classification shall be as follows:

Type	Min Lumens	Max Lumens
A	3,000	12,000
B	12,001	22,000
C	22,001	36,000
D	36,001	50,000

Where delivered lumens is defined as the initial delivered lumens at the specified color temperature. Luminaires above the stated maximums for the specified type will not be accepted

Basis of Payment.

This work will be paid for at the contract unit price per each for **LUMINAIRE, LED**, of the **TYPE** indicated

UNDERPASS LUMINAIRE

Effective: August 1, 2014 Revised: April 1, 2015

Revise the first paragraph of Article 821.06 of the Standard specifications to read:

"821.06 Underpass Installation. When attached directly to a structure, the underpass luminaire shall have stainless steel brackets installed between the luminaire and the structure to create a gap of not less than 1 in. (25mm)."

Revise the third paragraph of Article 821.06 of the Standard Specifications to read:

"All mounting hardware, including the vibration dampers, shall be stainless steel."

Revise Article 1067.04(a) of the Standard specifications to read:

"(a) Housing. The housing and lens frame shall be made of heavy duty die cast aluminum or 16 gauge (1.5mm) minimum thickness type 304 stainless steel. All seams in the housing enclosure shall be welded by continuous welds.

The housing shall have an opening for installation of ¾ in. (19mm) diameter conduit."

Revise the third sentence of the first paragraph of Article 1067.04(b) of the standard specifications to read:

"The lens frame shall be hinged with a continuous stainless steel piano type hinge for stainless steel housings."

Delete Article 106704© of the standard specifications.

LIGHT TOWER

Effective: January 1, 2015

Revise the second paragraph of Article 106908(a) of the Standard Specifications to read:

"All tower shaft components shall be fabricated from high strength, low alloy, steel according to AASHTO M 270 (M 270); ASTM A 595 (A 595M), grade A or B; ASTM A 1011 (A 1011M); ASTM A 606 (A 606M); ASTM A 588 (A 588M), or ASTM A 871 (A 871M) Grade 65, with a minimum yield strength of 50,000 psi (345,000 KPa)."

Revise the first sentence of the seventh paragraph of the Article 1069.08(e) of the Standard specifications to read:

"The ring shall be equipped with an enclosed wire raceway and a stainless steel terminal box built according to NEMA type 4X requirements for wiring of the luminaires."

Revise the eleventh paragraph of Article 1069.08(e) of the Standards Specifications to read:

"Ring designs that incorporate liquidtight flexible nonmetallic conduit to the terminal box shall use stainless steel conduit fittings. Liquidtight flexible nonmetallic conduit shall be according to Article 1088.01 (a)(4)."

Revise the third sentence of the seventh paragraph of Article 1069.08(f) of the Standard specification to read:

"Chains shall be stainless steel."

Revise the first sentence of the first paragraph of Article 1069.08(g) of the Standard specification to read:

"Cables (wire rope) shall be manufactured from type 304 or type 302 stainless steel and shall be stranded assembly coated with a friction-limiting non-corrosive lubricant."

Revise the second sentence of the second paragraph of Article 1069.08(g) of the Standard specification to read:

"Cables shall be manufactured and listed for compliance with military specification MIL- DTL-83420, Type 1, composition B."

Revise the third paragraph of Article 1069.08(g) of the Standard specification to read:

"Cable terminal shall be stainless steel whenever possible, shall be compatible with the cable, and shall be as recommended by the cable manufacturer. The terminals, swaging, etc., shall meet the requirements of military specification MIL-DTL-781. Stainless steel oval sleeves shall be according to military specification MS51844."

Revise the second and third sentence of the first paragraph of Article 1069.08(M) of the Standard specification to read:

"The tower main breaker and the motor breaker shall be housed in a stainless steel NEMA type 4 enclosure mounted on the side of the handhole pocket door. The main and motor breakers shall have an external position indicating, trip free operating handle having padlock provisions and shall be labeled by two color engraved nameplates clearly marking the "RESET", "ON", and "OFF" positions."

Revise the second paragraph of Article 1069.08(m) of the Standard specification to read:

"The main and motor circuit breakers shall be molded case, 2-pole, thermal magnetic, bolt-on type having a UL-listed interrupting rating of not less than 14,000 rms symmetrical amps at 480 V. The main breaker shall be sized for the motor but shall be a minimum of 30 A."

COATED GALAVANIZED STEEL CONDUIT
Effective: January 1, 2013 Revised: January 1, 2015

Revise Article 811.03(b) of the Standard specifications to read:

"(b) Coated Galvanized Steel Conduit. In addition to the methods described in Article 810.05(a) the following methods shall be observed when installing coated conduit.

Coated conduit pipe vise jaw adapters shall be used when the conduit is being clamped to avoid damaging the coating.

Coated conduit shall be cut with a roller cutter or by other means approved by the conduit manufacturer.

After any cutting or threading operations are completed, the bare steel shall be touched up with conduit manufacturer's touch up compound."

COILABLE NONMETALLIC CONDUIT
Effective: August 1, 2014 Revised: January 1, 2015

Revise Article 1088.01(c) of the Standard specifications to read:

"(c) Coilable Nonmetalic conduit. The conduit shall be a high density polyethylene duct which is intended for underground use can be manufactured and coiled of reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties or performance. The conduit and its manufacturer shall be according to UL 651A for Schedule 40 conduit, except Schedule 80 shall be used under pavement, stabilized shoulder, paved median, paved driveway, curb and/or gutter and sidewalk.

Performance Tests. Testing procedure and test results shall meet the requirements of UL 651A. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the conduit."

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 High Security 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 MEDECO High Security Locks, five pin, double D mounting, two key pulls. 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 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 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 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 s 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 tip 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.

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.

PI09 PUMP INSPECTION

Description. This item shall consist of providing labor, equipment, and material to perform pump inspection at locations listed herein. The removal and re-installation of the main submersible pump for the purpose of inspection and testing as specified herein and conform to PR496 shall be paid for in this pay item.

Work Description. The contractor shall inspect the pump impellor, wear ring, volute, propeller, housing and cables for any damage and provide an assessment to the engineer. The inspectional shall include taking oil samples for testing, cleaning of the pump from debris and caked on material. The Contractor shall install the pump after inspection is completed and assure its operation by performing capacity testing. The Contractor shall procure quotes for the pump repair when damage is found as directed by the Engineer. The Engineer will evaluate the specialty service quotations and authorize and pay for work. This type of work will be applicable at Pump Stations 5, 21, 22, 23, 24, 26, 27, and 30.

The Contractor/Service Company shall furnish all equipment, transportation and labor necessary to perform the work as specified herein. This work shall include but not limited to the following items:

1) Setting up for removal, Disconnect electric connections

2) Remove the pump, inspect the condition of the housing, cable, volute, impellor and wear ring as per manufacturer's recommendation. Inspect oil chamber for fluid leakage (contaminant) or only light seepage out of the inner hole in the casing.

3) Drain all the leakage fluid, and refill with a sealing fluid as recommended by the manufacturer.

4) Inspect oil for water intrusion in the motor seal chamber.

5) Drain, flush and refill the seal chamber with new oil.

6) Loading and unloading of equipment that requires inspection and repair.

7) Re-install pump, test operation.

This work will consist of removing and installing the submersible main pump only at the specified locations.

The above procedure is for information only, exact procedure necessary for removal and reinstallation of a complete operational pump is the responsibility of the Contractor/Service Company. This item shall also include the loading and unloading of pump parts and equipment.

Pump capacity, motor current readings shall be taken upon Installation of pump as applicable. The readings and tests shall conform to the pump and motor specifications or be approved by the Engineer.

Method of Measurement. Each Submersible pump removed, inspected 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 INSPECTION, which shall 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 496

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. All pump removal and reinstallation for repairs and rebuilds shall be documented in the pump station pump rebuild log sheet.

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 Contract Spare Parts. 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 Contract Spare Parts Pump/Pump Part(s) are to be used as a replacement:

1. The Contract Spare Parts 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.

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, 29, 33 and 35.

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 an 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 - 24, 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.

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 Contractor PS Specialist

The Vibration and Analysis Testing Consultant shall coordinate with the Contractor 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.

RMA1 BUDGETARY ROUTINE MAINTENANCE ALLOWANCE

Description. This item is to establish a budget account to allocate funds for the payment of routine maintenance of equipment at locations to be covered under this contract and maintained as specified herein. The total estimated amount of the annual expenses for services performed which will be paid under this contract, is $400,000 as indicated for Pay Item RMA1. For bidding purposes this amount shall be used.

SURVEILLANCE SYSTEMS NON-ROUTINE PAY ITEMS

SAI1 ADDITIONAL SURVEILLANCE RAMP METERING INSPECTION AND CLEANING

Description. The Contractor shall, upon request of the Engineer, provide an additional inspection and cleaning at S-1 locations within District One. The Contractor shall comply and perform each Ramp Metering Inspection as per details provided in Art. 9.0 Monthly

Ramp Metering Cabinet Inspection. This additional request is not a substitute for the routine monthly maintenance as defined in Art 9.0 for S-1 locations but is an additional inspection. When this item is exercised the Routine S-1 inspection for that location shall be performed at least ten (10) days before the completion of this pay item work; additional inspection and cleaning.

Method of Measurement. This item shall be measured as each for additional inspections and cleanings performed.

Basis of Payment. This work shall be paid for at the contract unit price each for ADDITIONAL SURVEILLANCE RAMP METERING INSPECTION AND CLEANING which price shall be payment in full for all labor and materials necessary to complete the work as described herein.

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 in effect on the date of invitation for bids and except as revised herein. This item shall consist of furnishing and installing two (2) low mounted eight inch LED yellow flashing beacons on an existing post as shown on the plans or directed by the Engineer. 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, as described above, which price shall be payment in full for all work as described herein to furnish and install as directed by the Engineer.

SC03 CABINET, TYPE 3, FOR SURVEILLANCE

Description. This item shall consist of furnishing and installing a new type 3 (lll) 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:

TYPE	HEIGHT	WIDTH	DEPTH	THICKNESS	MATERIAL
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.

SCC1 CCTV DOME CAMERA ASSEMBLY, COLOR, PTZ CONTROL, HD

Description. This item shall consist of furnishing, and delivering to a Contract Spare Parts facility as directed by the Engineer or installing in the field, a Color CCTV dome camera assembly complete with an outdoor environmentally rated housing equal to or exceeds VG5-7220-EPC4 HD IP PTZ Camera, NPD-60001A POE Injector, VG4-A-PA0 Pendant Arm, VG4-A-9541 Pole mount Adaptor, DTK-MRJPOE POE Ethernet Surge, and Isobar6 power strip surge suppressor.

The approved HD IP camera shall be compatible with the existing VDS drivers for integration into the existing video control system.

The assembly shall include a high performance color camera with 20X optical zoom or better.

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.

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**,** HD, which price shall be payment in full for furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer or installing in the field, the item as specified herein.

SCC2 CAMERA AND CABINET CONTROL MAINTENANCE

Description. This item shall consist cleaning a CCTV dome camera or fixed position camera and the cabinet for the video encoder and surge suppression. Contractor shall clean camera domes or glass on camera housing with glass cleaner and non-abrasive cloth. The cabinet shall be vacuumed and hand cleaned with biodegradable cleaner. All rodent debris shall be removed. Upon completion of cleaning the cabinet conduits shall be sealed with duct seal and steel wool. Contractor shall coordinate work as necessary to lower cameras on lighting towers for cleanings.

Method of Measurement. Contractor shall be paid per camera and cabinet cleaned.

Basis of Payment. This item shall be paid at the contract unit price, each, for CAMERA AND CABINET CONTROL MAINTENANCE.

SCC3 CAMERA LOWERING DEVICE

Description. This item shall consist of furnishing and installing an external camera lowering device for camera poles up to eight (80) feet.

The camera lowering device shall be designed to support and lower an Ethernet/IP direct closed circuit television camera, lens, housing, PTZ mechanism, cabling, connectors and other supporting field components without damage or causing degradation of the camera operations.

The camera lowering system shall consist of a lower winch box, permanently mounted winch with crank, upper mounting box, suspension contact unit, divided support arm and camera connection box. The divided support arm and receiver brackets shall be designed to self-align the contact unit with the center line during installation and ensure the contact unit cannot twist under high wind conditions. For maximum arm strength, round support arms are not acceptable.

The construction of the camera lowering device shall be Model by MG squared CLDMG2-EXT-HYPIP-080 or an approved equal. The lowering device manufacturer shall furnish an authorized factory representative to oversee the first installation of the camera lowering device onto the existing structure.

The Contractor shall be trained by the manufacturer as to the installation, operation and safety features of the lowering device for the particular project.

Basis of Payment. This work shall be paid at the contract unit price each for CAMERA LOWERING DEVICE, each, which price shall be payment in full for furnishing and installing system as described herein.

SCC4 CCTV CAMERA POLE

Description. This item shall consist of furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer or installing in the field, 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 in District 1.

Basis of Payment. This work shall be paid at the contract unit price each for CCTV CAMERA POLE, which price shall be payment in full for furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer or installing in the field, the item as specified herein.

SD01 DETECTOR LOOP SENSOR UNIT, FOUR CHANNEL DIGITAL

Description. This item shall consist of furnishing and installing a four (4) channel shelf mounted digital loop detector sensor unit in an existing cabinet at a 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 and 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 shelf mounted digital loop detector sensor unit in an existing cabinet at a 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 886 ~~847~~ of the Standard Specifications 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 IMSA 51-7, No 14-19 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 1 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)

W (FT.)	(m)	S (FT.)	(m)
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.

In areas where a second loop is added in the lane of travel to create a speed trap/classification station the new loop where practical can utilize the existing loop dive for the second loop of the speed trap. If it is determined by the Engineer the existing loop dive cannot be utilized a second loop dive shall be installed for the speed trap loop. The cost for the new loop dive shall be paid for utilizing existing pay items for conduit and asphalt remove/replace.

Traffic Systems Center

Loop Splicing Requirement

Mainline Loops	Metering Loops	Speed Count
Lane 1 - Blue	Loop 1 - Green - Input Loop	Lane 1 - Blue Exit-Black
Lane 2 - Brown	Loop 2 - Yellow - Demand Loop	Lane 2 - Brown Entrance-White
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, shall be drilled at least 12" in from the edge of pavement through which the 1" 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 the expressway lane closure shall be paid separately.

SD04 DMS UPS INVERTER AND BATTERIES, SKYLINE DMS

Description. The Contractor shall perform a UPS modification as specified herein and as directed by the Engineer.

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 affect. 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 DMS sign location shall be kept operational at all times except when 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 the National Electrical Code.

The work will generally include;

- Replacement of the existing inverter, batteries, harnesses, and rack mounting
- Reuse of AC terminal blocks, Cabinet electronics circuit breakers, Cabinet environmental circuit breakers, harnesses connecting the inverter to the pole support board or controller, inverter disconnect switch, AC sense relay, fuses, fans, heaters, etc…
- Installation of a new Alfa FXM 2000 inverter or equal
- Alpha Cell 220GXL 109 AH batteries (8) or equal

- Alpha 8 foot 48 volt battery harness (2) or equal
- Alpha Battery cable y adaptor or equal
- Alpha Rack mount kit or equal
- Misc connectors and wiring

The new inverter shall be interfaced into the DMS 170/2070 controller to report back voltage and battery status. The UPS shall be capable of reporting in the same manner as the existing inverter. It shall report door alarm, AC sense, and battery voltage signal. Battery voltage signal is used by the Controller to estimate the signs run time on the battery backup.

All work shall be tested once complete. The new inverter shall be capable of operating the DMS as the original UPS was designed. Testing shall be as defined in the Skyline Battery Backup Technical Reference Manual 21ST-0001-026 Rev. B

Method of Measurement. Each modification performed at a location as specified and approved by the Engineer shall be counted as a unit each for payment.

Basis of Payment. This item shall be paid at the Contract unit price each for DMS UPS INVERTER AND BATTERIES, SKYLINE DMS UPS , which shall be payment in full for the work described herein.

SD05 INDUCTIVE LOOP DETECTOR, RACK OR SHELF MOUNTED

Description. This item shall conform with sections 885 and 1079.01 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.

Installation. The inductive loop detector shall be installed inside a surveillance controller cabinet. The detector shall be either card rack type or shelf-mounted type. The detector may be single-channel or two-channel as directed by the Surveillance Engineer.

Where replacing an existing 4 channel shelf mounted detector the Contractor shall remove the existing 4 channel harness and furnish and install the necessary single channel harnesses to complete the installation.

Functions. The inductive loop detector shall have a front panel multiline graphic Liquid crystal display which aids in the set up and can display operational parameters and diagnostic information for all channels simultaneously.

The inductive loop detector shall conform to TS1-1989, 170/2070 requirements, and TS2-2003. For Nema TS2 the two channel and 4 channel devices shall meet the requirements for type C and D configurations respectively.

The inductive loop detector shall have a minimum of 20 levels of sensitivity control and shall have sufficient sensitivity to detect the smallest motor vehicle, including motor bikes.

The inductive loop detector shall have directional logic built in for wrong way vehicle detection.

The inductive loop detector shall support 3 different inductive loop types; normal loop, point probe, and rail mode

The inductive loop detector shall have solid state Optically Isolated Outputs.

Materials. Materials shall be according to Article 1079.01

Basis of Payment. This work will be paid for at the contract unit price each for INDUCTIVE LOOP DETECTOR, RACK OR SHELF MOUNTED 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

SDS1 PORTABLE DMS SIGN TRAILER

Description. This item shall consist of furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer or installing in the field, a fully functional Portable DMS Trailer with all the provisions as specified herein as directed by the Engineer.

Materials. The Portable DMS sign trailer shall meet applicable sections on Art. 1106.02 of the Standard Specifications and the following requirements below;

Message Sign:

A. Display panel dimensions: 133” long x 82” high

- Operating height: 200”
- Overall Length: 175”
- Overall width: 85”

B. Display:

- Full matrix – NO EXCEPTIONS
- 30 x 48 pixels
- Up to 3 lines of 8 characters per line
- 18” character default font
- Rotation of sign: 360 degrees

Sign Construction:

A. Material: aluminum sheet 5052-H32, .060” thick minimum

B. Panels shall be riveted together and incorporate internal ribs to add lateral strength

C. Interior and exterior paint color shall be flat black powder coated and oven baked for added durability and corrosion

D. Door: single piece construction hinged for ease of servicing sign

E. Door material: aluminum extruded frame with sheet metal corner brackets
F. Window: anti-glare Lexan solar grade polycarbonate .150" thick. Weather type seal shall be used to seal between window and extrusion
G. Lockable and vandal resistant

Hardware:

A. Stainless steel hinges
B. Telescoping prop slides shall be supplied in order to hold door open for servicing
C. Two (2) cooling fans shall be located at the top of the cabinet to provide circulation through and out of cabinet
   - Temperature sensor shall be mounted on or near the photocell pc board
   - Each fan shall have different thermal settings adjustable by the on-board computer as not to waste battery power

Wiring:

A. All harnesses shall be modularized for ease of servicing
B. All wiring connectors and procedures shall be per CSA or UL standards and the National Electrical Code
C. Wire service loop from computer box to sign shall be routed inside weather tight loom and clamped to trailer frame
D. Wire service loop shall be designed for 360 degree sign rotation
E. Display module connectors: all modules shall have quick-connect connectors for ease of servicing

Display Modules:

A. Module nominal size: 20" wide x 22 ½" high
B. Pixel type: four (4) amber LED's shall form a pixel
C. Number of pixels per character: 8 wide x 9 high, totaling 72, with default font
D. Size of LED pixel: 2.5" x 2.5" pixel pitch with a 30 degree viewing angle
E. Each LED module shall mount to cabinet via rubber vibration mounts
F. LED shall be 590 nm (+_2 nm) amber color
G. Optical lenses and sunshades:
   - Shall enhance the brightness and angularity of the LED's
   - Each pixel row shall have polycarbonate sunshades over the character face to prevent sun wash out
   - Each pixel shall have an optical lens over pixel to direct light to 30 degree visibility cone and reduce power requirements

H. Photocell dimming: two (2) photocells shall be mounted in sign (one facing rear and one facing front)
   - Photocells shall work in conjunction with the controller to adjust the brightness of the LED's

I. DMS sign server:
   - DMS sign shall be integrated into existing 360/Flir DMS server and iNET ATMS systems
   - Vendor must ensure and demonstrate full compatibility and operability with the 360/Flir and iNET systems
   - Vendor shall be responsible for providing the necessary perpetual software licenses for each DMS added to the 360/Flir system

Control Box:

A. Self-contained on-board computer with a sealed membrane keyboard that can be removable or touch screen
B. Control box shall be located on either the right front or right side of trailer and not lower than 36" above the ground in order for the operator to stand and view on-coming traffic
C. Control box shall be dust and weatherproof
    - A keyed lockable door (4 keys, keyed alike per unit shall be supplied)
    - A manual holder (computer operation) shall be located in the control box (manual pages shall be laminated)
    - All wiring in control box shall have quick-connect plugs
D. Control box shall house the sign controller, solar regulator, and modem
E. External all-weather hydraulic lift switch (located outside of control box)
F. Face of control panel shall have easy to read labels and instructions (stickers or decals shall not be acceptable)
G. Panel light shall be supplied to illuminate the control panel for nighttime reading. Light shall be designed to shut off automatically with no keyboard activity
H. LCD display:
    - Large pixel size
    - LED backlighting

Controller Software:

A. Full National Transportation Communications for ITS Protocol (NTCIP) 1203 v2 compliant software that shall be remotely upgradeable
B. Password protection. Multiple levels for users and technicians.
C. Messaging:
    - One-touch quick message selection from 12 pre-programmed function keys
    - Minimum of 50 permanent messages including arrows and Federal Highway Administration (FHWA) standards
    - Create and store over 100 created messages
    - Text alignment: selectable from left, center, or right
    - User selectable fonts including 8 x 9 pixel and 5 x 7 pixel
    - Each character shall be able to blink individually
    - Display shall be able to be viewed while programming
D. Real time clock/calendar with National Time Protocol (NTP) client support
E. Troubleshooting: status and diagnostic menu
F. Arrow board functions:
    - Number of modes: 12
    - Single flashing left or right arrow
    - Sequencing left or right arrow
    - Sequencing stem left or right arrow
    - Chevron left or right arrows
    - Four corner caution warning
    - Caution bar warning
    - Alternating diamonds

Trailer Construction:

A. Dimensions:
- Length including hitch: 175”
- Trailer width: 85”
- Travel height: 9 ½”
- Weight: 2,500 lbs. minimum

B. Trailer shall be constructed of rectangular steel tubing and manufactured to be structurally sound in design to support all components.

C. Draw bar shall be a heavy-duty A-frame type design

D. An appropriate rated 3” i.d. lunette eye for towing unit shall be supplied and be vertically adjustable in 2” increments totaling 12”

E. Two (2) safety chains 3/8” diameter x 36” long with grab hooks on each and of each chain shall be bolted to the trailer frame

F. Sign shall be designed to store easily and securely for transport

G. Fenders: stand-on type fenders coated with black non-skid material shall be attached to the trailer frame

H. Paint: complete unit shall be powder coated safety orange color and baked for durability and corrosion

I. Axle assembly: 3,500 lbs. capacity

J. Springs: double leaf springs

K. Tires: ST205/75 D15 black wall tires appropriately rated for trailer load

L. Electric brakes shall be wired within the trailer plug harness as outlined in section: 7PTC

M. Stabilizers:
- Four (4) hand crank weld-on round tube swivel jack with 2,000 lbs capacity each located at each corner of trailer
- Hand crank square tube drop leg jack shall be located on the trailer tongue

N. Wind stability: trailer with message sign in operating position shall be able to resist sliding or overturning in 70 mph winds in any direction

O. Trailer lights:
- LED type
- Sealed, combination stop, turn, and taillight
- All wiring shall be enclosed in a UV protective sleeve
- Meet all State and Federal Motor Vehicle Regulations
- Include license plate bracket and light
- Wired into a weatherproof and corrosion resistant 7-pole junction box mounted to the trailer “A” frame

P. Trailer plug: 36” long 7-prong round pin trailer plug shall be wired into a weatherproof and corrosion resistant 7-pole junction box mounted to the trailer “A” frame

Q. Mounted on inside rail of A-frame shall be a Grote 43901 or approved equivalent weatherproof documentation holder

Tower Assembly:

A. Sign shall be raised by a hydraulic power unit and lowered by gravity return. An external all-weather hydraulic lift switch shall be located outside of the control box

B. Height: sign fully telescoped shall be 7’ from ground to bottom of sign

C. Rotation: 360 degrees and shall lock in place with a disc brake/caliper and adjustable lever
D. Single stage hydraulic cylinder
E. Hydraulic power unit
- Electric motor driven
- 12-volt DC operation
- Hydraulic fluid (approximately 1-gallon capacity)
- Metal lockable (Authority shall supply padlocks) compartment shall house power unit from vandalism and weather

F. Tower material:
- Two (2) sections of steel tubing
- Inner section shall telescope inside outer tubing
- Inner section shall be zinc coated to prevent corrosion

G. Swivel base:
- Steel tubular weldment shall be bolted to the trail frame
- Outer tower section shall rotate inside the swivel base

H. Tower brake: mechanical friction caliper, caliper clamping by adjustable brake handle

I. Sight tube: A sight tube for aiming the message sign to the desired location shall be located on the tower mast

J. The trailer-mounted display shall be structurally adequate to withstand sustained freeway travel speeds of 65 miles per hour with the sign panels in the travel position.

K. When in operation with all stabilizing devices in place, the sign shall be capable of withstanding wind gusts up to 72 miles per hour without overturning or changing orientation and shall be capable of withstanding wind gusts up to 100 miles per hour without damage.

Power/Charging System:
A. Message board shall operate from a 12VDC power system.
B. Battery box:
- Box shall be designed with steel or polycarbonate construction
- Location shall be centered over axle
- Pad-lock type of latch to secure lid
- Side of battery box shall be louvered allowing cross ventilation
- Batteries shall be able to be charged with 110 volt AC charger with lid closed and locked
- Battery box shall be designed to hold the reaquired batteries needed and charger

C. Batteries:
- Maintenance free batteries as required to power board
- High-freeze resistance

D. Charger:
- Location shall be inside battery box with divider opposite batteries

- Output volts (DC): 13.4 Vdc @ full load
- Standard float voltage: 13.6V
- Output capacity: 45A minimum
- Max AC amp draw: 12A
- Input voltage: 96-140 Vac, three prong plug
- Cooling fan shall activate when charger reaches 95 degrees F.

Solar Panels:

A. High efficiency multi-crystal photovoltaic module
B. Regulation: solar panels regulated by controller power board
C. Solar panel array shall be attached to message sign frame and be able to independently tilt and rotate to receive maximum exposure to the sun

Lift Mechanism/Message Board:

A. The mast assembly shall include an electric hydraulic lift to raise and lower the sign board and hold it securely in place.
B. Bottom of sign shall be 7 feet above ground
C. In the event of loss power or failed hydraulics, the sign shall be able to be lowered manually.
D. The up/down toggle switch shall be located in the control box.

Cellular Router:

A. All Full Matrix Solar-Powered Message Board shall be equipped with a cellular router with built-in GPS. No Exceptions.

B. Modem:

- Commercial grade 4G cellular router shall provide secure high-speed wireless connectivity to remote sites and devices
- LTE service with fallback to EV-DO Rev. A. certified Verizon Wireless network
- IDOT shall establish and maintain cellular service
- External high-gain multi-band diversity and GPS anntennas for remote communication and real-time GPS reporting
- Support for TCP/IP, UDP/IP, DNS, NAT, Host Port Forwarding, DHCP, VLANC, DMZ, Port filtering, MAC address filtering, SSL, SSH, SNMP, SMTP, Host Ping.
- GPS support for NEMA 0138 V 3.0, TAIP and RAP protocols and less than 5 meter positional accuracy
- Support for Over-the Air network initialization and firmware upgrades
- Password protected remote management through web browser
- -30 degree C to +70 degree C. 90% RH operating range
- The modem shall be equal to or exceed Sierra Wireless Airlink GX440

Side-Fired Radar Traffic Detection Sensor:

A. Equip the Message board and Trailer with a side-fired radar traffic detection sensor in order to detect, measure, and report traffic volume, percent occupancy, average speed, individual speed, and individual vehicle length

B. The sensor shall be able to simultaneously detect and report information from up to ten lanes of traffic with a minimum detection rage of 10 to 250 feet from the sensor.

C. Volume data shall be within 5% of actual for any direction of travel when average speeds are greater than 10 miles per hour in every lane

D. Average speed data shall be accurate within 3 mph for each lane, and 90% of individual vehicle speed estimates shall be within 4 mph for any direction of traffic and for all conditions.

E. The sensor shall be able to meet all performance specifications from all lanes or lanes separated by medians, guard rail, or concrete barrier.

F. The sensor shall be supplied with software to allow verification and manual adjustment of the sensor configuration. The software shall provide a visual representation of the lane configuration and real-time traffic patterns, including the display of the measured volume, individual vehicle speed, and vehicle length to allow for lane width and spacing adjustments and verification of sensor performance.

G. The sensor shall be capable of continuous operation over a an ambient temperature range of -40 degree C to 75 degree C and a relative humidity range of 5% to 95% (non-condensing).

H. The sensor shall be mounted on a retractable and structurally stable mast with a minimum operating height of 18’ above ground

I. It is intended that the sensor shall communicate with and the data shall be integrated into IDOT’s existing third-party traffic management application iNET. The vendor shall provide at no additional cost, protocol information, MIB tables, a Software Development Kit or Application Programming Interface and technical support as necessary to enable the Department’s thired party velop to fully integrate the sensor data.

Remote Video Traffic Monitoring Package:

A. Equip the Message board and Trailer with a color PTZ dome camera to monitor traffic. The camera shall be able to be controlled remotely and can be paned, tilted and zoomed.

B. Remote video traffic monitoring package shall come with telescoping (electric/hydraulic) mast assembly enabling the camera to be positioned at least 6 ft higher than the top of the message sign

C. Tower assembly shall mount to the back of the message sign support frame

D. Extended camera height from ground shall be a minimum of 20 Ft.

E. An electric winch shall raise and lower camera tower.

F. Electric winch shall have a friction brake allowing designated heights

G. Momentary winch switch shall be located inside the lockable control box

H. Camera:

- Dome day/night Pan Tilt Zoom (PTZ) digital camera
- 360 degree pan movement
- Vertical tilt: unobstructed 0 to -90 degree
- Low light sensitivity
- Zoom: optical 35X, 12X digital
- M-JPEG and H.264 video streams
- Resolution: CIF and 4CIF/D1.
- Support for UDP, IP V4/6, HTTP, IGMP V2/V3, Telnet, RTP, FTP, DHCP, SNMP V3, SSH, SSL, ARP
- Support for NTCIP 1205, 1101, 2301, 2202, 2101, 2102
- Firmware up-loadable
- Operating temperature 0 degree F to 140 degree F.

I. Video server:

- Shall be integrated into existing 360/Flir VDS video server
- Vendor must ensure and demonstrate full compatibility and operability with the 360/Flir system
- Vendor shall be responsible for providing a perpetual software license for each camera added to the 360/Flir system

J. Cellular router:

- One (1) cellular router shall control the camera system, radar unit, and message board sign.
- Antennas shall be mounted on top of message sign

K. Low voltage disconnect module (LVDM):

- Electronic module shall provide power management control to the camera system
- Camera system shall be able to operate independently from the main system
- Toggle switch shall turn camera LVDM on and off

Increased Power Supply:

A. Battery bank shall be sized to allow sign, camera, radar unit, and communications equipment to operate for thirty (30) days without solar assist

B. Solar panels: larger or an additional solar panel shall be supplied if needed to adequately and efficiently supply the correct power source for all functions and additional options (Message Board, GPS, Radar, and Camera system).

Manuals:

A. One (1) of each of the following paper manuals shall be supplied with each message board ordered. A PDF copy of each manual shall also be supplied:

- Operators manual (message board-laminated)
- Programming manual (message board)
- Parts manual (message board)
- Maintenance manual (message board)
- Operators manual (cellular modem)
- Operators manual (radar system)
- Operators manual (camera system)
- Maintenance manual (trailer)
- Parts manual (trailer)

Spare Parts List:
Provide a suggested list of spare parts the Department shall have on hand to adequately service the DMS, CCTV and Radar detector systems

Warranty:
The Contractor shall provide an additional one (1) year warranty coverage on all the individual systems supplied as part of this item beyond the standard 6 months warrantly coverage as defined in Article 801.14 of the IDOT Standard Specifications for Road and Bridge Construction.

SPECIFICATIONS: 7PTC

7-POLE ROUND PIN TRAILER CONNECTORS ON TRUCKS AND TRAILERS

CONNECTOR MARKING COLOR APPLICATION

WHITE……..…….……..…….GROUND

BLACK……..…….……..……TAIL LIGHT

BROWN……..…….TAIL LIGHT

YELLOW……..……LEFT TURN SIGNAL

GREEN…….……..……RIGHT TURN SIGNAL

RED……..……ELECTRIC BRAKE

BLUE……..……12-VOLT BATTERY- WITH 30-AMP AUTOMATIC

BIMETAL THERMAL RESET CIRCUIT PROTECTION

Portable DMS sign Trailer shall be equal to or exceed Ver-Mac ASM-278 with CCTV and Radar Detectors

Method of Measurement. The item shall be counted as each Portable DMS furnished and delivered to the Department.

Basis of Payment. This item shall be paid for at the contract unit price each for, Portable DMS Sign Trailer, which price shall be for furnishing, demonstration testing, integration, licenses, warranty, and delivery of the Portable DMS sign trailer to a remote facility located within District One.

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.

Work Description. 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.

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 up to 6 Surveillance control cabinets connected to one electric service and to all poles, posts, handholes, etc.

Bonding of equipment ground to all exposed metal parts

Testing and documentation

<u>Replace Electric Service Entrance</u>
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/DMS 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. No additional compensation shall be allowed for the installation of additional electrodes to meet the 10 ohm resistance to earth requirement.

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, CPE, 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. In cases where the path from the service disconnect travels through a hand hole to the Surveillance cabinet the new feeder run can be comprised of multiple single conductors. This will allow for the bonding of the hand hole frame and lid to the service disconnect and to the Surveillance cabinet. Breeching of the multi-conductor, CPE jacketed, cable will not be allowed. It shall be the Contractors responsibility to confirm the existing conditions prior to ordering and installing cable. 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 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 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 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.

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. 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

MAINLINE LOOPS			METERING LOOPS
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.

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

SE03 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.

SE04 ETHERNET MANAGED SWITCH

Description. The Contractor shall furnish and install a field hardened Ethernet Managed Switch at a Com Shelter, Pump House, DMS, CCTV, 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 -40ºC to +85ºC 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 55ºC 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)

Vibration in each of the 3 mutually perpendicular planes.

Vibration frequency sweep of 5 to 30 Hz

Vibration strength = 0.5g

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 – 1000Base X fiber optic Gigabit Ethernet 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)

1000 Base X Fiber Optic ports:

SFP pluggable optics shall support multiple connector types LC or SC, bi directional singlestrand fiber support, and longhaul optics which allow Gigabit distances up to 70 Km.

SFP 10km wavelength 1310, singlemode fiber 9/125 typical loss budget 17 db

SFP 25km wavelength 1310, singlemode fiber 9/125 typical loss budget 19 db

SFP 70km wavelength 1550, singlemode fiber 9/125 typical loss budget 25db

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 802.1 p 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	-40ºC, 16 hours	N/A
IEC 60068-2-2	Dry Heat	Test Bd	+85ºC, 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.

Each Gigabit switch shall be furnished with the a SFP from the above list of SFP's by the Engineer. The network will dictate the SFP used when installed in an existing system daisy chained Gigabit switches.

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.

SRR1 REVLAC RESTRAINING BARRIER TAPE CARTRIDGE, NEW

Description. This item is for furnishing, and delivering to a Contract Spare Parts facility as directed by the Engineer or installing in the field, a new Energy Absorbing Tape Cartridge 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 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, NEW**,** which price shall be payment in full for the work as described herein.

SRR2 REVLAC RESTRAINING BARRIER DRAGNET ASSEMBLY, FURNISH ONLY

Description. This item shall consist of furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer 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 sliver 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 a Contract Spare Parts facility as directed by the Engineer.

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 in effect on the date of invitation for

bids 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 TSC 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. One Face shall be comprised of two 8" modules. The basis of payment is each for furnishing and installing the signal section Face, 2 Signal Head modules 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.

SS02 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 100,000 operations at rated load, meet or exceed NEMA Standard TS 2-2003 and shall be Reno Flash transfer relay TR-200 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 contracts 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.

SSG1-SSG6 SWING GATE ARM, FURNISH ONLY

Description. This item is for furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer, 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:

The free end of the assembled gate arm shall not sag more than 0.75 inches, below horizontal, under its own weight.

The longest gate arm assembly, excluding the flexible gate tip, shall not deflect more than 36 inches, horizontally, in the specified wind loads.

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.

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).

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 tress 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, 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 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-striped 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	(SSG1)
SWING GATE ARM, (5 FT.) TO (8 FT.), FURNISH ONLY	(SSG2)
SWING GATE ARM, (9 FT.) TO (12 FT.), FURNISH ONLY	(SSG3)
SWING GATE ARM, (13 FT.) TO (16 FT.), FURNISH ONLY	(SSG4)
SWING GATE ARM, (17 FT.) TO (20 FT.), FURNISH ONLY	(SSG5)
SWING GATE ARM, (21 FT.) TO (23 FT.), FURNISH ONLY	(SSG6**)**

which price shall be payment in full for furnishing and delivering to a Contract Spare Parts facility as directed by the Engineer, the materials as directed by the Engineer.

ST01 TELCO SUPPRESSION

Description. This item shall consist of furnishing and installing on an existing 66 block, silicon avalanche diode technology, transient voltage surge suppression for DS 0 data lines connected to Telco T-1 and E-1 chassis at Communication Cross Connects, Comm Huts, or at the 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. The TELCO Suppression shall meet or exceed Raycap AC Data M66 series 66P015 or Emerson Edco COHP -015 surge suppression modules.

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:

Number of Cable Pairs	Average Mutual Capacitance mf/mile (mf/km)
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:

Pair-to-Pair Capacitance Unbalance (Max)

Number of Cable Pairs	mmf/kf (mmf/km) Max. Individual
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:

Number of	Pair-to-Shield Capacitance Unbalance (Max)

Cable Pairs	mmf/kf (mmf/km)
	Max. Individual
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.

	Maximum Resistance
AWG	ohms/kf (ohms/km)
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, INSTALL ONLY

Description. This item shall consist of retrieving from the State's contract spare parts facility, installing and testing telecommunication cable of the type and size specified. There are several sizes of cable at the State's contract spare parts 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.

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 Engineer 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.

SVB1 BUDGETARY ALLOWANCE FOR REPLACEMENT PLC 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 no additional cost to the Contract.

The total estimated amount of the annual expenses for services performed which will be paid under Article 9.0, is $70,000 as indicated for Pay Item SVB1. For bidding purposes this amount shall be used.

SVB2 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 no additional cost to the Contract.

The total estimated amount of the annual expenses for services performed which will be paid under Article 9.0, is $80,000 as indicated for Pay Item SVB2. For bidding purposes, this amount shall be used.

SVB3 BUDGETARY ALLOWANCE FOR BUILDING AND 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 9.0, is $60,000 as indicated for Pay Item SVB3. For bidding purposes this amount shall be used.

SVB4 BUDGETARY ALLOWANCE FOR RAMP GATES

Description. This item is to establish a budget account to allocate funds for materials and/or repairs for motorist caused damage to ramp gates and attenuators.

The total estimated amount of the annual expenses for services performed which will be paid under Article 9.0, is $70,000 as indicated for Pay Item SVB4. For bidding purposes this amount shall be used.

TRAFFIC SIGNAL SYSTEM NON-ROUTINE PAY ITEMS

All Traffic Signal System Non-Routine pay items shall conform with the current Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Special Provisions except as revised herein.

TC01–TC02 FULL ACTUATED CONTROLLER IN CABINET

Description. All equipment shall be NEMA TS 2 Type 1 unless otherwise approved by the Engineer. At the time this item is authorized, the Traffic 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. Existing items such as UPS/Battery Back-up System, PTZ camera equipment, TSP/BRT and other devices may be designation by the Engineer as to be relocated to the new controller and cabinet and is considered included in this item. Removal and delivery of any existing controller, cabinet, and all other related equipment in the cabinet not be reused is considered included in this item. The Contractor shall deliver the removed equipment to the Contract Spare Parts 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 includes furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC01 Full Actuated Controller In Type IV Cabinet
TC02 Full Actuated Controller In Type V Cabinet

TC03 FULL ACTUATED CONTROLLER IN CABINET WITH RR EQUIPMENT

Description. 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 Traffic 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. Existing items such as UPS/Battery Back-up System, PTZ camera equipment, TSP/BRT and other devices may be designation by the Engineer as to be relocated to the new controller and cabinet and is considered 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 Contract Spare Parts 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 or TYPE V CABINET WITH RAILROAD EQUIPMENT as described above, which price shall be payment in full for all work as described herein and includes furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC04 FULL ACTUATED CONTROLLER

Description. Equipment shall be NEMA TS 2 Type 1 unless otherwise approved by the Engineer. At the time this item is authorized, the Traffic 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 Contract Spare Parts 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 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 includes which price shall be payment in full for furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC05–TC06 INSTALL TRAFFIC SIGNAL CONTROLLER OR CONTROLLER AND CABINET FROM CONTRACT SPARE PARTS

Description. 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 Contract Spare Parts controller and/or cabinet at a location directed by the Traffic Signal Engineer. The current controller software at time of field installation shall be included in these items. The cabinet shall be the type designated on the plans. The Contractor shall provide five (5) copies (11" x 17") of the cabinet wiring diagrams and in PDF format on a CDRom 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 Contract Spare Parts equipment to the intersection and

remove and transport the existing equipment to the Contractor's location for Contract Spare Parts storage.

Existing items such as UPS/Battery Back-up System, PTZ camera equipment, TSP/BRT and other devices may be designation by the Engineer as to be relocated to the Contract Spare Parts controller and cabinet and is considered included in this item.

Basis of Payment. This work shall be paid at the contract unit price each for INSTALL TRAFFIC SIGNAL CONTROLLER, OR CONTROLLER AND CABINET from Contract Spare Parts as described above, which price shall be payment in full for all described herein and includes furnishing, installing, delivery, handling and appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC05 INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER
TC06 INSTALL EXISTING TRAFFIC SIGNAL CONTROLLER AND CABINET

TC07 CONTROLLER AND CABINET MODIFICATION

Description. 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, UPS 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 as described herein and includes furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC08 FIBER OPTIC COMMUNICATIONS CONTROL EQUIPMENT

Description. 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 a fiber optic closed loop system or ATMS, 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 Contract Spare Parts storage location per the requirements of the contract.

Basis of Payment. This work shall be paid at the contract unit price each for FIBER OPTIC COMMUNICATIONS CONTROL EQUIPMENT of the type specified as described above, which price shall be payment in full for all work as described herein and includes furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as indicated on the drawings and as approved by the Traffic Signal Engineer.

TC09 TRAFFIC SIGNAL MASTER CONTROLLER

Description. 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 Traffic 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 Contract Spare Parts 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 includes furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC10 INSTALL TELEPHONE LINE AND MODEM

Description. This work shall consists of providing a phone line to a traffic signal controller cabinet to provide a working remote monitoring capabilities by the IDOT Traffic 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. Cable 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 authorization, the Contractor shall contact Raymond Eaves, Administrative Support Manager in the District One Business Services Section at Raymond.Eaves@illinois.gov or (847) 705-4011 to request a phone line installation. A follow-up contact shall include all required information pertaining to the phone installation and should be made as soon as possible or within one week after the initial request has been made. A copy of this contact must be emailed by the Contractor to the Traffic Signal Systems Engineer. The required information to be supplied shall include (but not limited to): An E911 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 will vary after the Business Services Section has received the Contractor's information and will depend on location and existing available facilities. It is, therefore, imperative that the phone line conduit and pull-string be installed by the Contractor as soon as possible. The contractor shall provide the Administrative Support Manager with an expected installation date

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).

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 Traffic Signal Engineer.

TC11 INSTALL UPDATED SOFTWARE OR PROM SET AT EXISTING LOCAL OR MASTER CONTROLLER

Description. This item shall consist of installing the latest version of software, PROM or PROM Set in an existing traffic signal local or master controller. At locations that contain coordination modules, all PROMS in the controller module, 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 SOFTWARE, PROM or 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 includes furnishing, installing, testing, and all appurtenances necessary for a complete and operational unit as approved by the Traffic Signal Engineer.

TC12 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 on the plans.

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 and includes furnishing, installing, delivery, handling, replacement of any incandescent EVP confirmation beacon with LED type and all appurtenances necessary for a complete and operational unit as indicated on the drawings and as approved by the Traffic Signal Engineer.

TD01 DRILL EXISTING HANDHOLE

Description. Refer to Section 879 of the Standard Specifications for Road and Bridge Construction.

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. 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

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 Traffic Signal Engineer. The existing foundation shall be removed to a depth of at least 2-feet 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 Special Provisions 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 12-inch L.E.D. single section red or yellow flashing beacon on an existing post as shown on the plans or directed by the Traffic 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), 12-inch L.E.D. red or yellow signal section with a dimmer if required by the Traffic Signal Engineer, and all other includeds necessary to complete the installation.

As directed by the Traffic 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 and LED modules 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 and materials as described herein and includes furnishing, installing, delivery, handling and all appurtenances necessary for a complete and operational unit as indicated on the drawings and as approved by the Traffic Signal Engineer.

TFB2 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 Special Provisions. This item shall consist of furnishing and installing a 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 all work and materials as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary for a complete and operational unit as indicated on the drawings and as approved by the Traffic Signal Engineer.

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.

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 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 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 on 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.

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 price shall be payment in full for all work as described herein and includes furnishing, installing, delivery, handling, testing, connections, bonding and all appurtenances necessary for a completely grounded system as indicated on the drawings and as approved by the Traffic Signal Engineer.

TL01 INDUCTIVE LOOP DETECTOR

This work shall consist of furnishing and installing a vehicle or bicycle inductive loop detector, as directed by the Traffic Signal Engineer, according to Articles/Section 1079.01 of the Standard Specifications. The bicycle inductive loop detector shall differentiate bicycles from motorized vehicles.

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, as directed by the Traffic Signal Engineer.

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 Special

Provisions 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 Traffic Signal Engineer.

TMA1–TMA2 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 Special Provisions 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 and materials as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary for a complete assembly as directed by the Traffic Signal Engineer.

TMA1 Steel Mast Arm Assembly and Pole 28 ft to 40 ft
TMA2 Steel Mast Arm Assembly and Pole 42 ft to 55 ft

TMA3 RELOCATE OR INSTALL MAST ARM ASSEMBLY AND POLE FROM CONTRACT SPARE PARTS

Description. This item shall conform with sections 877 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Special Provisions except as revised herein. The Mast Arm Assembly and Pole shall come from Contract Spare Parts 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 Contract Spare Parts 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 Traffic 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 Traffic 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 and materials as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary to relocate a mast arm pole assembly or install a mast arm assembly from Contract Spare Parts as directed by the Traffic Signal Engineer.

TPP1 PEDESTRIAN PUSH-BUTTON POST, GALVANIZED STEEL

This work shall consist of furnishing a nominal 3 or 4.5 inch diameter pedestrian push-button post and installing it on a base and concrete foundation as shown on the District One Traffic Signal detail sheets. The post diameter shall be as directed by the Traffic Traffic Signal Engineer and shall be coordinated with the base construction.

See Traffic Signal Post and Base, Article/Section 1077, Concrete Article/Section 1020 and IDOT District One details sheets.

The pedestrian push-button post shall be installed plumb on a round base and 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, GALVANIZED STEEL, which price shall be payment in full for all work and materials as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary.

TPP2 PEDESTRIAN PUSH-BUTTON, LATCHING AND NON-LATCHING

This item shall conform with sections 888 and 1074 of the Standard Specifications for Road and Bridge Construction and District 1 Traffic Signal Special Provisions except as revised herein. The Pedestrian Push-button assembly shall be one piece cast aluminum alloy with momentary LED or latching type LED display, as directed by the Traffic Traffic Signal Engineer, such as the Campbell 4EVR 120 or Polara Bulldog type, or an approved equivalent and include pedestrian push button station, sign, and push button extension. See District One Traffic Signal Special Provisions for Pedestrian Station and Sign Requirements.

Basis of Payment. This work shall be paid at the contract unit price each for PEDESTRIAN PUSH-BUTTON, LATCHING AND NON-LATCHING as described above, which price shall be payment in full for all work and material as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary for a complete working unit as directed by the Traffic Signal Engineer.

TR01 TO TR02 ROTATE SIGNAL PHASING OR RE-ASSIGN SYSTEM DETECTORS

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 Traffic Signal Engineer. The phase rotation shall consist of the following items to complete the phase rotation:

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.
Modify the controller programming and phase overlaps to provide the proposed sequence of operations.
All back panel modifications are required to provide the proposed sequence of operations and system detection.

The Contractor shall provide five (5) copies (11" x 17") of revised cabinet wiring diagrams and pdf files on CDROM.

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.

This work shall include reassigning system detectors in an existing Closed Loop System as per the plan or as directed by the Traffic Signal Engineer. This item includes 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 each for ROTATE SIGNAL PHASING OR RE-ASSIGN SYSTEM DETECTORS at one signalized intersection as described above, which price shall be payment in full for all work and materials as described herein and as directed by the Traffic Signal Engineer.

TSB1 TRAFFIC SIGNAL BACKPLATE, REFLECTIVE

Delete second sentence of the fourth paragraph of Article 1078.03 of the Standard Specifications.

Add the following to the fourth paragraph of Article 1078.03 of the Standard Specifications:

Reflective sheeting shall be Type ZZ according to Article 1091.03, 3-inches wide and applied in the manufucturer's preferred orientation for the maximum angularity according. The retro reflective sheeting shall be installed under a controlled environment at the manufacturer/supplier facilities before shipment for field installation. The backplate shall be prepared and cleaned, following recommendations of the retro reflective sheeting manufacturer.

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 Special

Provisions. 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.

TSL1–TSL7 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 Special Provisions, 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 Traffic 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 Traffic 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 Traffic 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, 3 Section
TSL2 LED Signal Head, 1 Face, 4 Section
TSL3 LED Signal Head, 1 Face, 5 Section
TSL4 LED Signal Head, Optically Programmed, 1 Face, 3 Section
TSL5 LED Signal Head, Optically Programmed, 1 Face, 5 Section
TSL6 LED Signal Head, Remotely Steerable Optics, 1 Face, 3 Section
TSL7 LED Signal Head, Remotely Steerable Optics, 1 Face, 5 Section

TSL8 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 Special Provisions, 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 Traffic 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 Traffic 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 Traffic Signal Engineer.

TSL9 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 Special Provisions, 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. Existing pedestrian push button signing shall be replaced with new count-down type signs (R10-3e, 9-inch x 15-inch) with associated sign station or housing at locations where existing push buttons are not being replaced.

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 Traffic Signal Engineer. Any modifications to mounting hardware shall be included in this item.

Pedestrian Countdown Signal Head, LED, shall be 16 inch (406mm) x 18 inch (457mm) and conform fully to the District 1 Traffic Signal Special Provisions.

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 Special Provisions, 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 Traffic 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 Traffic 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 Special Provisions 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 Contract Spare Parts. 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 Traffic 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 and material as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary for a complete working unit as directed by the Traffic Signal Engineer.

TT01 SPAN WIRE TRAFFIC SIGNAL INSTALLATION WITH ELECTRIC SERVICE AND UPS

Description. This item shall conform with sections 890 of the Standard Specifications for Road and Bridge Construction, the District 1 Traffic Signal Special Provisions 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 Traffic 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 Traffic 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 or three (3) signal heads spaced a minimum of eight feet apart.

The Electric Service Installation and UPS, as described in the District One Traffic Signal Specification, shall be included in this item.

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 Contract Spare Parts. 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 equipted) 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 Traffic 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 and material as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary for a complete working span wire traffic signal as directed by the Traffic 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 Traffic 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 Special Provisions 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 and material as described herein and includes furnishing, installing, delivery, handling and all appurtenances and mounting hardware necessary for a complete unit as directed by the Traffic 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 Traffic 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 Traffic Signal Engineer.

TTP2 Remove Traffic Signal Post
TTP3 Remove Mast Arm Assembly and Pole

TVD1-TVD2 VIDEO DETECTION SYSTEM, COMPLETE INTERSECTION OR SINGLE INTERSECTION APPROACH

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 Solo Terra, Iteris Vantage cameras or an approved equal video vehicle detection system for a single intersection approach or all approaches at one signalized intersection. This item includes vision/camera sensors, processing equipment an all necessary hardware, cable and accessories necessary to complete the installation in accordance with the manufacturer’s specifications. The system shall also include a 10-inch LCD in-cabinet monitor with BNC connector for video input. A multi-camera video switching unit shall be provided to select video input to the monitor.

The cameras are normally installed on top of the luminaire arm. However, occasionally overhead utility wires obstruct the camera’s field of view and prevent proper detector placement.
When this occurs, the camera shall be installed on a J-hook below the luminaire arm.

To protect the video detection cameras from electrical surges, the interface panel shall be
grounded as follows:
1. The chassis sheet metal must be tied to ground with the supplied ground wire and stud.
2. All shield wires should be tied to the chassis ground stud.
3. Terminal position three (3) of each of the camera terminations shall be tied to the ground
stud.

4. All extra/spare wires in the Autoscope MVP cable should be tied to ground.

All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The supplier of the video detection system shall supervise the installation and testing of the video detection system. A factor certified representative from the supplier shall be on-site during installation.

The video detection system shall be warranted by its supplier for a minimum of two (2) years with ongoing software support by the supplier and no-cost video sensor and supervisor software.

Basis of Payment: This item will be paid for at the contract unit price each for VIDEO DETECTION SYSTEM, COMPLETE INTERSECTION or SINGLE INTERSECTION APPROACH, which price shall be payment in full for all work and material as described herein and includes furnishing, installing, delivery, handling, testing, set-up and all appurtenances and mounting hardware necessary for a complete operating detection unit at one signalized intersection as directed by the Traffic Signal Engineer.

TVD1 Video Detection System, Complete Intersection
TVD2 Video Detection System, Single Intersection Approach

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 senors to detect the presence and movement of vehicles. This work shall consist of furnishing and installing a 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 exact number of sensors, access points and repeater will vary on intersection size and other variables. 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 be included in this item.

General:
The wireless detection system shall support 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 requires 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, unless otherwise approved by the Traffic Signal Engineer. Additional repeaters may be necessary for proper operation. 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 Traffic Signal 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 wireless detection system. 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 and material as described herein and includes furnishing, installing, delivery, handling, testing, set-up and all appurtenances and installation equipment necessary for a complete operating system as approved by the Traffic 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 and material as described herein and includes furnishing, installing, delivery, handling, testing, set-up and all appurtenances and installation equipment necessary for a complete operating system as approved by the Traffic Signal Engineer.

TWD3-TWD4Radar Vehicle Detection System

Description.

This work shall consist of furnishing and installing a radar vehicle detection system as specified and/or as shown on the plan. This pay item shall include all necessary work and equipment required to have a fully operational system including but not limited to the detector unit/s, the interface unit and all the necessary hardware, cable and accessories required to complete the installation in accordance with the manufacturer's specifications.

The radar vehicle detection system shall work under all weather conditions, including rain, freezing rain, snow, wind, dust, fog, and changes in temperature and light. It shall work in an ambient temperature range of -34 to 74 degrees Celsius. It shall have a max power output of 75 watts or less.

The radar vehicle detection system 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. The radar vehicle detection system shall provide a minimum of one interface unit that has Ethernet connectivity, surge protection and shall be capable of supporting a minimum of 4 detector units.

The far back radar detection shall have a detection range of 400 feet or better.

A representative from the supplier of the radar vehicle detection system shall supervise the installation and testing of the radar vehicle detection system and shall be present at the traffic signal turn-on inspection. Once the radar vehicle detection system is configured, it shall not need reconfiguration to maintain performance, unless the roadway configuration or the application requirements change.

The mounting location/s of the detector unit/s shall be per the manufacturer's recommendations. If an extension mounting assembly is needed, it shall be included in this item. All holes drilled into signal poles, mast arms, or posts shall require rubber grommets to prevent chafing of wires.

The radar vehicle detection system shall be warrantied, free from material and workmanship defects for a period of two years from final inspection.

Basis of Payment.
This work shall be paid for at the contract unit price each for RADAR DETECTION SYSTEM, SINGLE APPROACH, STOP BAR DETECTION; RADAR VEHICLE DETECTION SYSTEM, SINGLE APPROACH, STOP BAR AND ADVANCE DETECTION, the price of which shall include the cost for all of the work and material described herein and includes furnishing, installing, delivery, handling, testing, set-up and all appurtenances and mounting hardware necessary for a fully operational radar vehicle detection system.

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 and material as described herein and includes furnishing, installing, delivery, handling, testing, set-up and all appurtenances and installation equipment necessary for a complete operating wireless interconnect system as approved by the Traffic Signal Engineer.

MAST ARM SIGN PANELS

Effective: May 22, 2002

Revised: July 1, 2015

720.01TS

Add the following to Article 720.02 of the Standard Specifications:

Sign stiffening channel systems shall be aluminum and meet the requirements of ASTM 6261-T5. Sign mounting banding, buckles and buckle straps shall be manufactured from AISI 201 stainless steel.

SIGN SHOP DRAWING SUBMITTAL

Effective: January 22, 2013

Revised: July 1, 2015

720.02TS

Add the following paragraph to Article 720.03 of the Standard Specifications:

Shop drawings will be required, according to Article 105.04, for all Arterials/Expressways signs except standard highway signs covered in the MUTCD. Shop drawings shall be submitted to the Engineer for review and approval prior to fabrication. The shop drawings shall include dimensions, letter sizing, font type, colors and materials.

TRAFFIC SIGNAL GENERAL REQUIREMENTS

Effective: May 22, 2002

Revised: July 1, 2015

800.01TS

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 unless otherwise noted herein.
- Traffic signal construction and maintenance work shall be performed by personnel holding current IMSA Traffic Signal Technician Level II certification. A copy of the certification shall be immediately available upon request of the Engineer.

- The work to be done under this contract consists of furnishing, installing and maintaining all traffic signal work and items as specified in the Plans and as specified herein in a manner acceptable and approved by the Engineer.

Definitions of Terms.

Add the following to Section 101 of the Standard Specifications:

101.56 Vendor. Company that sells a particular type of product directly to the contractor or the Equipment Supplier.

101.57 Equipment supplier. Company that supplies, represents and provides technical support for IDOT District One approved traffic signal controllers and other related equipment. The Equipment Supplier shall be located within IDOT District One and shall:

- Be full service with on-site facilities to assemble, test and trouble-shoot traffic signal controllers and cabinet assemblies.
- Maintain an inventory of IDOT District One approved controllers and cabinets.
- Be staffed with permanent sales and technical personnel able to provide traffic signal controller and cabinet expertise and support.
- Technical staff shall hold current IMSA Traffic Signal Technician Level III certification and shall attend traffic signal turn-ons and inspections with a minimum 14 calendar day notice.

Submittals.

Revise Article 801.05 of the Standard Specifications to read:

All material approval requests shall be submitted electronically through the District's SharePoint System unless directed otherwise by the Engineer. Electronic material submittals shall follow the District's Traffic Operations Construction Submittals guidelines. General requirements include:

1. All material approval requests shall be made prior to or no later than the date of the preconstruction meeting. A list of major traffic signal items can be found in Article 801.05. Material or equipment which is 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.
2. Product data and shop drawings shall be assembled by pay item. Only the top sheet of each pay item submittal will be stamped by the Department with the review status, except shop drawings for mast arm pole assemblies and the like will be stamped with the review status on each sheet.

3. Original manufacturer published product data and shop drawing sheets with legible dimensions and details shall be submitted for review.
4. When hard copy submittals are necessary, four complete copies of the manufacturer's descriptive literatures and technical data for the traffic signal materials shall be submitted. For hard copy or electronic submittals, the descriptive literature and technical data shall be adequate for determining whether the materials meet the requirements of the plans and specifications. If the literature contains more than one item, the Contractor shall indicate which item or items will be furnished.
5. When hard copy submittals are necessary for structural elements, four complete copies of the shop drawings for the mast arm assemblies and poles, and the combination mast arm assemblies and poles showing, in detail, the fabrication thereof and the certified mill analyses of the materials used in the fabrication, anchor rods, and reinforcing materials shall be submitted.
6. Partial or incomplete submittals will be returned without review.
7. Certain non-standard mast arm poles and special structural elements will require additional review from IDOT's Central Office. Examples include ornamental/decorative, non-standard length mast arm pole assemblies and monotube structures. The Contractor shall account for the additional review time in his schedule.
8. The contract number or permit number, project location/limits and corresponding pay code number must be on each sheet of correspondence, catalog cuts and mast arm poles and assemblies drawings.
9. 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.
10. 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 'Incomplete'. 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.
11. The Contractor shall secure approved materials in a timely manner to assure construction schedules are not delayed.
12. All submitted items reviewed and marked 'APPROVED AS NOTED', 'DISAPPROVED', or 'INCOMPLETE' 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.

13. 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.
14. Contractor shall not order major equipment such as mast arm assemblies prior to Engineer approval of the Contractor marked proposed traffic signal equipment locations to assure proper placement of contract required traffic signal displays, push buttons and other facilities. Field adjustments may require changes in proposed mast arm length and other coordination.

Marking Proposed Locations.

Revise "Marking Proposed Locations for Highway Lighting System" of Article 801.09 to read "Marking Proposed Locations for Highway Lighting System and Traffic Signals."

Add the following to Article 801.09 of the Standard Specifications:

It shall be the contractor's responsibility to verify all dimensions and conditions existing in the field prior to ordering materials and beginning construction. This shall include locating the mast arm foundations and verifying the mast arms lengths.

Inspection of Electrical Systems.

Add the following to Article 801.10 of the Standard Specifications:

(c) 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's facility prior to field installation, at no extra cost to this contract.

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, Municipality or Transit Agency 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, Area Traffic Signal Maintenance and Operations Engineer, IDOT ComCenter and the Department's Electrical Maintenance Contractor with two 24-hour emergency contact names and telephone numbers.

b. Automatic Traffic Enforcement equipment such as red lighting running and railroad crossing camera systems are owned and operated by others and the Contractor shall not be responsible for maintaining this equipment.

c. Regional transit, County and other agencies may also have equipment connected to existing traffic signal or peripheral equipment such as PTZ cameras, switches, transit signal priority (TSP and BRT) servers and other devices that shall be included with traffic signal maintenance at no additional cost to the contract.

d. 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.

e. 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 shut down 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.

f. The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals and other equipment noted herein. 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 $1000 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 $1000 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The Department may inspect any signalizing device on the Department's highway system at any time without notification.

g. Any proposed activity in the vicinity of a highway-rail grade crossing must adhere to the guidelines set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) regarding work in temporary traffic control zones in the vicinity of highway-rail grade crossings which states that lane restrictions, flagging, or other operations shall not create conditions where vehicles can be queued across the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a uniformed law enforcement officer or flagger shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.

h. The Contractor shall be responsible to clear snow, ice, dirt, debris or other condition that obstructs visibility of any traffic signal display or access to traffic signal equipment.

i. The Contractor shall maintain the traffic signal in normal operation during short or long term loss of utility or battery back-up power at critical locations designated by the Engineer. Critical locations may include

traffic signals interconnected to railroad warning devices, expressway ramps, intersection with an SRA route, critical corridors or other locations identified by the Engineer. Temporary power to the traffic signal must meet applicable NEC and OSHA guidelines and may include portable generators and/or replacement batteries. Temporary power to critical locations shall not be for separately but shall be included in the contract.

Damage to Traffic Signal System.

Add the following to Article 801.12(b) of the Standard Specifications to read:

Any traffic signal control equipment damaged or not operating properly from any cause shall be replaced with new equipment meeting current District One traffic signal specifications and 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 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 are only allowed at the bases pf post and mast arms.

Temporary replacement of damaged or knockdown of a mast arm pole assembly shall require construction of a full or partial span wire signal installation or other method approved by the Engineer to assure signal heads are located overhead and over traveled pavement. Temporary replacement of mast arm mount signals with post mount signals will not be permitted.

Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause, shall be the responsibility of the municipality or the Automatic Traffic Enforcement company per Permit agreement.

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 Equipment Supplier 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 written or electronic notification is provided from the Contractor that the equipment has been field tested and the intersection is operating according to Contract requirements. The Contractor must invite local fire department personnel to the turn-on when Emergency Vehicle Preemption (EVP) is included in the project. When the contract includes the item RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM, OPTIMIZE TRAFFIC SIGNAL SYSTEM, or TEMPORARY TRAFFIC SIGNAL TIMINGS, the Contractor must notify the SCAT Consultant of the turn-on/detour implementation 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 assist with traffic control at the time of testing.

The Contractor shall provide a representative from the control equipment vendor's office who is knowledgeable of the cabinet design and controller functions 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 Final Project Documentation from the Contractor at traffic signal turn-ons in electronic format in addition to hard copies where noted. A CD/DVD shall be submitted with separate folders corresponding to each numbered title below. The CD/DVD shall be labelled with date, project location, company and contract or permit number. Record Drawings, Inventory and Material Approvals shall be submitted prior to traffic signal turn-on for review by the Department as described here-in.

Final Project Documentation:

1. Record Drawings. Signal plans of record with field revisions marked in red ink. One hard copy set of 11"x17" record drawings shall also be provided.
2. Inventory. Inventory of new and existing traffic signal equipment including cabinet types and devices within cabinets in an Excel spread sheet format. One hard copy shall also be provided.
3. Pictures. Digital pictures of a minimum 12M pixels of each intersection approach showing all traffic signal displays and equipment. Pictures shall

include controller cabinet equipment in enough detail to clearly identify manufacture and model of major equipment.

4. Field Testing. Written notification from the Contractor and the equipment vendor of satisfactory field testing with corresponding material performance measurements, such as for detector loops and fiber optic systems (see Article 801.13). One hard copy of all contract required performance measurement testing shall also be provided.
5. Materials Approval. The material approval letter. A hard copy shall also be provided.
6. Manuals. Operation and service manuals of the signal controller and associated control equipment. One hard copy shall also be provided.
7. Cabinet Wiring Diagram and Cable Logs. Five (5) hard copies 11” x 17" of the cabinet wiring diagrams shall be provided along with electronic pdf and dgn files of the cabinet wiring diagram. Five hard copies of the cable logs and electronic excel files shall be provided with cable #, number of conductors and spares, connected device/signal head and intersection location.
8. Controller Programming Settings. 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 controller manufacturer shall also supply a printed form, not to exceed 11” x 17” for recording that data noted above. 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.
9. Warrantees and Guarantees. All manufacturer and contractor warrantees and guarantees required by Article 801.14.
10. GPS coordinate of traffic signal equipment as describe in the Record Drawings section herein.

Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal “turn on”, completeness of the required documentation and successful operation during a minimum 72 hour “burn-in” period following activation of the traffic signal. 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.

Record Drawings.

The requirements listed for Electrical Installation shall apply for Traffic Signal Installations in Article 801.16. Revise the 2nd paragraph of Article 801.16 of the Standard Specifications to read:

"When the work is complete, and seven days before the request for a final inspection, the reduced-size set of contract drawings, stamped "RECORD DRAWINGS", shall be submitted to the Engineer for review and approval and shall be stamped with the date and the signature of the Contractor's supervising Engineer or electrician. The record drawings shall be submitted in PDF format on CDROM as well as hardcopy for review and approval. If the contract consists of multiple intersections, each intersection shall be saved as an individual PDF file with TS# and location name in its file name.

In addition to the record drawings, copies of the final catalog cuts which have been Approved or Approved as Noted shall be submitted in PDF format along with the record drawings. The PDF files shall clearly indicate the pay item either by filename or PDF Table of Contents referencing the respective pay item number for multi-item PDF files. Specific part or model numbers of items which have been selected shall be clearly visible."

As part of the record drawings, the Contractor shall inventory all traffic signal equipment, new or existing, on the project and record information in an Excel spreadsheet. The inventory shall include equipment type, model numbers, software manufacturer and version and quantities.

Add the following to Article 801.16 of the Standard Specifications:

"In addition to the specified record drawings, the Contactor shall record GPS coordinates of the following traffic signal components being installed, modified or being affected in other ways by this contract:

- All Mast Arm Poles and Posts
- Traffic Signal Wood Poles
- Rail Road Bungalow
- UPS
- Handholes
- Conduit roadway crossings
- Controller Cabinets
- Communication Cabinets
- Electric Service Disconnect locations
- CCTV Camera installations
- Fiber Optic Splice Locations
- Conduit Crossings

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:

- File shall be named: TSXXX-YY-MM-DD (i.e. TS22157_15-01-01)
- Each intersection shall have its own file
- Row 1 should have the location name (i.e. IL 31 @ Klausen)
- Row 2 is blank
- Row 3 is the headers for the columns
- Row 4 starts the data
- Column A (Date) – should be in the following format: MM/DD/YYYY
- Column B (Item) – as shown in the table below
- Column C (Description) – as shown in the table below
- Column D and E (GPS Data) – should be in decimal form, per the IDOT special provisions

Examples:

Date	Item	Description	Latitude	Longitude
01/01/2015	MP (Mast Arm Pole)	NEQ, NB, Dual, Combination Pole	41.580493	-87.793378

01/01/2015	HH (Handhole)	Heavy Duty, Fiber, Intersection, Double	41.558532	-87.792571
01/01/2015	ES (Electrical Service)	Ground mount, Pole mount	41.765532	-87.543571
01/01/2015	CC (Controller Cabinet)		41.602248	-87.794053
01/01/2015	RSC (Rigid Steel Crossing)	IL 31 east side crossing south leg to center HH at Klausen	41.611111	-87.790222
01/01/2015	PTZ (PTZ)	NEQ extension pole	41.593434	-87.769876
01/01/2015	POST (Post)		41.651848	-87.762053
01/01/2015	MCC (Master Controller Cabinet)		41.584593	-87.793378
01/01/2015	COMC (Communication Cabinet)		41.584600	-87.793432
01/01/2015	BBS (Battery Backup System)		41.558532	-87.792571
01/01/2015	CNCR (Conduit Crossing)	4-inch IL 31 n/o of Klausen	41.588888	-87.794440

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 1 foot. 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.

Accuracy. Data collected is to be mapping grade. 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 1 foot accuracy after post processing.

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."

Delete the last sentence of the 3rd paragraph of Article 801.16.

Locating Underground Facilities.

Revise Section 803 to the Standard Specifications to read:

IDOT traffic signal facilities are not part of any of the one-call locating service such as J.U.L.I.E or Digger. 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, locally owned equipment, and leased enforcement camera system facilities, the local Counties or Municipalities may need to be contacted: in the City of Chicago contact Digger at (312) 744-7000 and for all other locations contact J.U.L.I.E. at 1-800-892-0123 or 811.

Restoration of Work Area.

Add the following article to Section 801 of the Standard Specifications:

801.17 Restoration of work area. Restoration of the traffic signal work area shall be included in the related pay items such as foundation, conduit, handhole, underground raceways, 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. All brick pavers disturbed in the work area shall be restored to their original configuration as directed by the Engineer. All damaged brick pavers shall be replaced with a comparable material approved by the Engineer. Restoration of the work area shall be included in the contract without any extra compensation allowed to the Contractor.

Bagging Signal Heads.

Light tan colored traffic and pedestrian signal reusable covers shall be used to cover dark/un-energized signal sections and visors. Covers shall be made of outdoor fabric with urethane coating for repelling water, have elastic fully sewn around the cover ends for a tight fit over the visor, and have a minimum of two straps with buckles to secure the cover to the backplate. A center mesh strip allows viewing without removal for signal status testing purposes. Covers shall include a message indicating the signal is not in service.

OPTIMIZE TRAFFIC SIGNAL SYSTEM

Effective: May 22, 2002

Revised: July 1, 2015

800.02TS

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 noted 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 a CD, 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 and on a Saturday or Sunday, as directed by the Engineer, to account for special traffic generators such as shopping centers, educational institutes and special event facilities. 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. The consultant shall respond to IDOT comments and public complaints for a minimum period of 90 days from date of timing plan implementation.

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:

Cover Page in color showing a System Map

Figures

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.

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4. Data Collection
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6. Implementation

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7. Evaluation

   a. Speed and Delay runs

Tab 2. Turning Movement Counts

1. Turning Movement Counts (Showing turning movement counts in the intersection diagram for each period, including truck percentage)

Tab 3. Synchro Analysis

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

4. Special weekend or off-peak traffic generators (shopping centers, educational facilities, arenas, etc.): same as AM

Tab 4: Speed, Delay Studies

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.

Tab 5: Environmental Report

1. Environmental impact report including gas consumption, NO2, HCCO, improvements.

Tab 6: Electronic Files

1. Two (2) CDs for the optimized system. The CDs shall include the following elements:

   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 an approved report and CD have been submitted.

RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM

Effective: May 22, 2002

Revised: July 1, 2015

800.03TS

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 discs, copies of computer simulation files for the existing optimized system and a timing database 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 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. The consultant shall respond to IDOT comments and public complaints for a minimum period of 60 days from date of timing plan implementation.

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(s) 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 and on a Saturday and/or Sunday, as directed by the Engineer, to account for special traffic generators such as shopping centers, educational institutes and special event facilities. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.

b. As necessary, the intersection(s) 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(s)

      (4) New or updated intersection(s) graphic display file for the subject intersection(s)

      (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. Each intersection will be paid for separately.

ELECTRIC SERVICE INSTALLATION

Effective: May 22, 2002

Revised: July 1, 2015

805.01TS

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 "District One Standard Traffic Signal Design Details".

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 to the Engineer and Area Traffic Signal Maintenance and Operations Engineer. The service agreement and sketch shall be submitted for signature to the IDOT's Traffic Operations Programs 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 vendor.

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.

3. All enclosures shall include a green external power indicator LED light with circuitry as shown in the Electrical Service-Panel Diagram detail sheet. For pole mounted service enclosures, the power indicator light shall be mounted as shown in the detail. For ground mounted enclosures, the power indicator light shall be mounted on the side of the enclosure most visible from the major roadway.

c. Electric Utility Meter Housing and Riser. The electric meter housing and meter socket shall be supplied and installed by the contractor. Electric utility required risers, weather/service head and any other materials necessary for connection shall also be included in the pay item. Materials shall be in accordance with the electric utility's requirements. For ground-mounted service, the electric utility meter housing shall be mounted to the enclosure. Metered service shall not be used unless specified in the plans.

d. 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.

e. 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.

f. 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.

g. 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.

h. 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.

i. 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 CONCRETE FOUNDATION, TYPE A, 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

Effective: May 22, 2002

Revised: July 1, 2015

806.01TS

Revise Section 806 of the Standard Specifications to read:

General.

All traffic signal systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC. This work shall be in accordance with IDOT's District One Traffic Signal Design Details.

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 were measured resistance exceeds 25 ohms. Ground rods are included in the applicable concrete foundation or service installation 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 UL Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers, conduits, 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 UL listed electrical joint compound shall be applied to all conductors' terminations, connector threads and contact points. Conduit grounding bushings shall be installed at all conduit terminations including spare or empty conduits.

3. All metallic and non-metallic raceways 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.

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, UL listed pressure connectors, and UL listed clamps .

COILABLE NON-METALLIC CONDUIT

Effective: May 22, 2002

Revised: July 1, 2015

810.01TS

Description.

This work shall consist of furnishing and installing empty coilable non-metallic conduit (CNC).

General.

The CNC installation shall be in accordance with Sections 810 and 811 of the Standard Specifications except for the following:

Add the following to Article 810.03 of the Standard Specifications:

CNC meeting the requirements of NEC Article 353 shall be used for detector loop raceways to the handholes.

Add the following to Article 811.03 of the Standard Specifications:

On temporary traffic signal installations with detector loops, CNC meeting the requirements of NEC Article 353 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.

Basis of Payment.

All installations of CNC for loop detection shall be included in the contract and not paid for separately.

UNDERGROUND RACEWAYS

Effective: May 22, 2002

Revised: July 1, 2015

810.02TS

Revise Article 810.04 of the Standard Specifications to read:

> "Installation. All underground conduits shall have a minimum depth of 30-inches (700 mm) below the finished grade."

Add the following to Article 810.04 of the Standard Specifications:

> "All metal conduit installed underground shall be Rigid Steel Conduit unless otherwise indicated on the plans."

Add the following to Article 810.04 of the Standard Specifications:

> "All raceways which extend outside of a structure or duct bank but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum or 300 mm (12") or the length shown on

the plans beyond the structure or duct bank. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped.

The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap.

The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125") thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring."

ROD AND CLEAN EXISTING CONDUIT

Effective: January 1, 2015

Revised: July 1, 2015

810.03TS

Description.

This work shall consist of inserting a duct rod or electrical fish rod or tape of sufficient length and rigidity into an electrical conduit opening in one electrical handhole, and pushing the said rod through the conduit to emerge at the next or subsequent handhole in the conduit system at the location(s) shown on the plans. The duct rod may be inserted and removed by any standard construction method which causes no damage to the conduit. The size of the conduit may vary, but there shall be no differentiation in cost for the size of the conduit.

The conduit which is to be rodded and cleaned may exist with various amounts of standing water in the handholes to drain the conduit and to afford compatible working conditions for the installation of the duct rods and/or cables. Pumping of handholes shall be included with the work of rodding and cleaning of the conduit.

Any handhole which, in the opinion of the Engineer contains excessive debris, dirt or other materials to the extent that conduit rodding and cleaning is not feasible, shall be cleaned at the Engineer's order and payment approval as a separate pay item.

Prior to removal of the duct rod, a duct cleaning attachment such as a properly sized wire brush or cleaning mandrel shall be attached to the duct rod, which by removal of the duct rod shall be pulled through the conduit to remove sand, grit, or other light

obstructions from the duct to provide a clean, clear passage for the installation of cable. Whenever the installation of cables is not performed as an adjunct to or immediately following the cleaning of the duct, a light weight pulling line such as a 1/8" polyethylene line or conduit measuring tape shall be placed and shall remain in the conduit to facilitate future work. When great difficulty of either inserting the duct rod or removal of the cleaning mandrel is encountered, the duct may require further cleaning by use of a compressed air gun, or a low pressure water hose. In the case of a broken conduit, the conduit must be excavated and repaired. The existence and location of breaks in the conduit may be determined by rodding, but the excavation and repair work required will be paid for separately.

This work shall be measured per lineal foot for each conduit cleaned. Measurements shall be made from point to point horizontally. No vertical rises shall count in the measurement.

Basis of Payment.

This work shall be paid for at the contract unit price per lineal foot for ROD AND CLEAN EXISTING CONDUIT for the installation of new electric cables in existing conduits. Such price shall include the furnishing of all necessary tools, equipment, and materials required to prepare a conduit for the installation of cable.

HANDHOLES

Effective: January 01, 2002

Revised: July 1, 2015

814.01TS

Description.

Add the following to Section 814 of the Standard Specifications:

All conduits shall enter the handhole at a depth of 30 inches (762 mm) 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 (13 mm) diameter with two 90 degree bends and extend into the handhole at least 6 inches (152 mm). Hooks shall be placed a minimum of 12 inches (305 mm) below the lid or lower if additional space is required.

Precast round handholes shall not be used unless called out on the plans.

The cover of the handhole frame shall be labeled “Traffic Signals" with legible raised letters.

Revise the third paragraph of Article 814.03 of the Standard Specifications to read:

> “Handholes shall be constructed as shown on the plans and shall be cast-in-place, or precast concrete units. Heavy duty handholes shall be either cast-in-place or precast concrete units.”

Add the following to Article 814.03 of the Standard Specifications:

> “(c) Precast Concrete. Precast concrete handholes shall be fabricated according to Article 1042.17. Where a handhole is contiguous to a sidewalk, preformed joint filler of 1/2 inch (13 mm) thickness shall be placed between the handhole and the sidewalk.”

Cast-In-Place Handholes.

All cast-in-place handholes shall be concrete, with inside dimensions of 21-1/2 inches (546 mm) minimum. Frames and lid openings shall match this dimension.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (11 mm) diameter stainless steel 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 (305mm).

Precast Round Handholes.

All precast handholes shall be concrete, with inside dimensions of 30 inches (762mm) diameter. Frames and covers shall have a minimum opening of 26 inches (660mm) and no larger than the inside diameter of the handhole.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (11 mm) diameter stainless steel bolt cast into the frame. For the purpose of attaching the grounding conductor to the handhole cover, the covers shall either have a 7/16 inch (11 mm) diameter stainless steel bolt cast into the cover or a stainless steel threaded stint extended from an eye hook assembly. A hole may be drilled for the bolt if one cannot be cast into the frame or cover. The head of the bolt shall be flush or lower than the top surface of the cover.

The minimum wall thickness for precast heavy duty hand holes shall be 6 inches (152 mm).

Precast round handholes shall be only produced by an approved precast vendor.

Materials.

Add the following to Section 1042 of the Standard Specifications:

"1042.17 Precast Concrete Handholes. Precast concrete handholes shall be according to Articles 1042.03(a)(c)(d)(e)."

GROUNDING CABLE

Effective: May 22, 2002

Revised: July 1, 2015

817.01TS

The cable shall meet the requirements of Section 817 of the "Standard Specifications," except for the following:

Add the following 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 UL Listed grounding connector 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. The grounding conductor shall be bonded to conduit terminations using rated grounding bushings. 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, EQUIPMENT GROUNDING CONDUCTOR, NO. 6 1C, which price includes all associated labor and

material including grounding clamps, splicing, exothermic welds, grounding connectors, conduit grounding bushings, and other hardware.

FIBER OPTIC TRACER CABLE

Effective: May 22, 2002

Revised: July 1, 2015

817.02TS

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. All tracer cable splices shall be kept to a minimum and shall incorporate maximum lengths of cable supplied by the manufacturer. The tracer cable will be allowed to be spliced at handholes only. The tracer cable splice shall use a Western Union Splice soldered with resin core flux and shall be soldered using a soldering iron. Blow torches or other devices which oxidize copper cable shall not be allowed for soldering operations. All exposed surfaces of the solder shall be smooth. The splice shall be covered with a black shrink tube meeting UL 224 guidelines, Type V and rated 600V, 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.

MAINTENANCE OF EXISTING TRAFFIC SIGNAL AND FLASHING BEACON INSTALLATION

Effective: May 22, 2002

Revised: July 1, 2015

850.01TS

General.

1. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the Contract or any portion thereof. If Contract work is started prior to a traffic signal inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection.

2. The Contractor shall have electricians with IMSA Level II certification on staff to provide signal maintenance. A copy of the certification shall be immediately available upon request of the Engineer.

3. This item shall include maintenance of all traffic signal equipment and other connected and related equipment such as flashing beacons, emergency vehicle pre-emption equipment, master controllers, uninterruptable power supply (UPS and batteries), PTZ cameras, vehicle detection, handholes, lighted signs, telephone service installations, communication cables, conduits to adjacent intersections, and other traffic signal equipment.

4. Regional transit, County and other agencies may also have equipment connected to existing traffic signal or peripheral equipment such as PTZ cameras, switches, transit signal priority (TSP and BRT) servers, radios and other devices that shall be included with traffic signal maintenance at no additional cost to the contract.

5. Maintenance shall not include Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, or peripheral equipment. This equipment is operated and maintained by the local municipality and should be de-activated while on contractor maintenance.

6. The energy charges for the operation of the traffic signal installation shall be paid for by the Contractor.

Maintenance.

1. 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. The Contractor shall check signal system communications and phone lines to assure proper operation. 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. Prior to the traffic signal maintenance transfer, the contractor shall supply a detailed maintenance schedule that includes dates,

locations, names of electricians providing the required checks and inspections along with any other information requested by the Engineer.

2. The Contractor is advised that the existing and/or span wire 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 shut down 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.

3. 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 or otherwise removed from normal operation, 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. When the signals operate in flash, 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.

4. The Contractor shall provide the Engineer with 2 (two) 24 hour telephone numbers for the maintenance of the traffic signal installation and for emergency calls by the Engineer.

5. 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 the Standard Specifications and these special provisions.

6. The Contractor shall respond to all emergency calls from the Department or others within one (1) 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. The Contractor shall be responsible

for all of the State's Electrical Maintenance Contractor's costs and liquidated damages of $1000 per day per occurrence. 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.

7. Any proposed activity in the vicinity of a highway-rail grade crossing must adhere to the guidelines set forth in the current edition of the Manual on Uniform Traffic Control Devices (MUTCD) regarding work in temporary traffic control zones in the vicinity of highway-rail grade crossings which states that lane restrictions, flagging, or other operations shall not create conditions where vehicles can be queued across the railroad tracks. If the queuing of vehicles across the tracks cannot be avoided, a uniformed law enforcement officer or flagger shall be provided at the crossing to prevent vehicles from stopping on the tracks, even if automatic warning devices are in place.

8. Equipment included in this item that is damaged or not operating properly from any cause shall be replaced with new equipment meeting current District One traffic signal specifications and 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 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.

9. Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause, shall be the responsibility of the municipality or the Automatic Traffic Enforcement Company per Permit agreement.

10. The Contractor shall be responsible to clear snow, ice, dirt, debris or other condition that obstructs visibility of any traffic signal display or access to traffic signal equipment.

11. The Contractor shall maintain the traffic signal in normal operation during short or long term loss of utility or battery back-up power at critical locations designated by the Engineer. Critical locations may include traffic signals interconnected to railroad warning devices, expressway ramps, intersection with an SRA route, critical corridors or other locations identified by the Engineer. Temporary power to the traffic signal must meet applicable NEC and OSHA guidelines and may include portable generators and/or replacement batteries. Temporary power to

critical locations shall not be paid for separately but shall be included in the contract.

12. Temporary replacement of damaged or knockdown of a mast arm pole assembly shall require construction of a full or partial span wire signal installation or other method approved by the Engineer to assure signal heads are located overhead and over traveled pavement. Temporary replacement of mast arm mount signals with post mount signals will not be permitted.

Basis of Payment.

This work will be paid for at the contract unit price per each for MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION. Each intersection will be paid for separately. Maintenance of a standalone and or not connected flashing beacon shall be paid for at the contract unit price for MAINTENANCE OF EXISTING FLASHING BEACON INSTALLATION. Each flashing beacon will be paid for separately.

TRAFFIC SIGNAL PAINTING

Effective: May 22, 2002

Revised: July 1, 2015

851.01TS

Description.

This work shall include surface preparation, powder coated 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 vendor's 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 contaminates 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 ºF 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 ºF.

The finish paint color shall be one of the vendor'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.

Painting of traffic signal heads, pedestrian signal heads and controller cabinets is not included in this pay item.

Any damage to the finish after leaving the vendor's facility shall be repaired to the satisfaction of the Engineer using a method recommended by the vendor and approved by the Engineer. If while at the vendor's facility the finish is damaged, the finish shall be re-applied at no cost to the contract.

Warranty.

The Contractor shall furnish in writing to the Engineer, the paint vendor'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 AND POLE, UNDER 40 FEET (12.19 METER), PAINT NEW MAST ARM AND POLE, 40 FEET (12.19 METER) AND OVER, PAINT NEW COMBINATION MAST ARM AND POLE, UNDER 40 FEET (12.19 METER), PAINT NEW COMBINATION MAST ARM AND POLE, 40 FEET (12.19 METER) AND OVER, or PAINT NEW TRAFFIC SIGNAL POST of the length specified, 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.

FULL-ACTUATED CONTROLLER (SPECIAL)

Effective: September 26, 1995

Revised: July 1, 2015

857.01TS

Description.

This work shall consist of furnishing and installing a(n) "_____" brand traffic actuated solid state digital controller meeting the requirements of the current District One Traffic Signal Special Provisions 857.02TS Full Actuated Controller and Cabinet, and 857.02TS Railroad, Full Actuated Controller and Cabinet . This pay item shall include furnishing and installing the controller complete including malfunction management unit, load switches and flasher relays, and all necessary connections for proper operation.

Materials.

Add the following to Article 857.02 of the Standard Specifications:

Controllers shall be NTCIP compliant, Econolite ASC/3S-1000 or Eagle/Siemens M50 unless specified otherwise on the plans or elsewhere on these specifications. A NTCIP compliant controller may be used at a traffic signal interconnected to railroad warning devices but only upon the approval of the Engineer. Only controllers supplied by one of the District One approved closed loop equipment supplier will be allowed. The controller shall be the most recent model and software version supplied by the equipment supplier at the time of the traffic signal TURN-ON and include data key. 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 omitted during program changes and after all preemption events.

Basis of Payment.

This work will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER (SPECIAL).

FULL-ACTUATED CONTROLLER AND CABINET

Effective: January 1, 2002

Revised: July 1, 2015

857.02TS

Description.

This work shall consist of furnishing and installing a traffic actuated solid state digital controller in the controller cabinet of the type specified, meeting the requirements of Section 857 of the Standard Specifications, as modified herein, including malfunction management unit, load switches and flasher relays, with all necessary connections for proper operation.

If the intersection is part of an existing system and/or when specified in the plans, this work shall consist of furnishing and installing a(n) "_____" brand traffic actuated solid state controller.

Materials.

Add the following to Article 857.02 of the Standard Specifications:

For installation as a stand-alone traffic signal, connected to a closed loop system or integrated into an advance traffic management system (ATMS), controllers shall be Econolite ASC/3S-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 suppliers will be allowed. Unless specified otherwise on the plans or these specifications, the controller shall be of the most recent model and software version supplied by the equipment supplier at the time of the traffic signal TURN-ON. A removable controller data key shall also be provided. 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 and shall inhibit simultaneous display of circular yellow and yellow arrow indications.

For integration into an ATMS such as Centracs, Tactics, or TransSuite, the controller shall have the latest version of NTCIP software installed. For operation prior to integration into an ATMS, the controller shall maintain existing close loop management communications.

Add the following to Article 1074.03 of the Standard Specifications:

(a) (6) 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) (1) Revise “conflict monitor” to read “Malfunction Management Unit”

(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 – Shall be a 120VAC Single phase Modular filter Plug-in type, supplied from an approved vendor.

(b) (8) BIU – shall be secured by mechanical means.

(b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.

(b) (10) Switch Guards – All switches shall be guarded.

(b) (11) Heating – One (1) 200 watt, thermostatically-controlled, electric heater.

(b) (12) Lighting – One (1) LED Panel shall be placed inside the cabinet top panel and one (1) LED Panel shall be placed on each side of the pull-out drawer/shelf assembly located beneath the controller support shelf. The LED Panels shall be controlled by a door switch. The LED Panels shall be provided from an approved vendor.

(b) (13) The cabinet shall be equipped with a pull-out drawer/shelf assembly. A 1 ½ inch (38mm) deep drawer shall be provided in the cabinet, mounted directly beneath the controller support shelf. The drawer shall have a hinged top cover and shall be capable of accommodating one (1) complete set of cabinet prints and manuals. This drawer shall support 50 lbs. (23 kg) in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 18 inches (610mm) wide.

(b) (14) Plan & Wiring Diagrams – 12” x 15” (305mm x 406mm) moisture sealed container attached to door.

(b) (15) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.

(b) (16) Field Wiring Labels – All field wiring shall be labeled.

(b) (17) Field Wiring Termination – Approved channel lugs required.

(b) (18) Power Panel – Provide a nonconductive shield.

(b) (19) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.

(b) (20) Police Door – Provide wiring and termination for plug in manual phase advance switch.

Basis of Payment.

This work will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET; FULL-ACTUATED CONTROLLER AND TYPE V CABINET; FULL-ACTUATED CONTROLLER AND TYPE SUPER P CABINET;

FULL-ACTUATED CONTROLLER AND TYPE SUPER R CABINET; FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL; FULL-ACTUATED CONTROLLER AND TYPE V CABINET, SPECIAL; FULL-ACTUATED CONTROLLER AND TYPE SUPER P CABINET (SPECIAL); FULL-ACTUATED CONTROLLER AND TYPE SUPER R CABINET (SPECIAL).

RAILROAD, FULL-ACTUATED CONTROLLER AND CABINET

Effective: January 1, 2002

Revised: July 1, 2015

857.03TS

Description.

This work shall consist of furnishing and installing a traffic actuated solid state digital controller in the controller cabinet of the type specified, meeting the requirements of Section 857 of the Standard Specifications as modified herein and including conflict monitor, load switches and flasher relays, with monitoring and/or providing redundancy to the railroad preemptor and all necessary connections for proper operation.

If the intersection is part of an existing system and/or when specified in the plans, this work shall consist of furnishing and installing a(n) "_____" brand traffic actuated solid state controller.

Controller and cabinet shall be assembled only by an approved IDOT District One traffic signal equipment supplier. The equipment shall be tested and approved in the equipment supplier's District One's facility prior to field installation.

Materials.

Add the following to Article 857.02 of the Standard Specifications:

For installation as a stand-alone traffic signal, connected to a closed loop system or integrated into an advance traffic management system (ATMS), controllers shall be Econolite ASC/3S-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 supplier will be allowed. The controller shall be the most recent model and software version approved by IDOT for use with railroad intersections supplied by the equipment supplier at the time of the traffic signal TURN-ON unless specified otherwise on plans or this specification, and include a removable data key. Individual load switches shall be provided for each vehicle, pedestrian, and right turn over lap phase. The controller shall prevent phases from being omitted during program changes and after all preemption events and shall inhibit simultaneous display

of circular yellow and yellow arrow indications.

For integration into an ATMS such as Centracs, Tactics, or TransSuite, the controller shall have the latest version of NTCIP software installed. For operation prior to integration into an ATMS, the controller shall maintain existing communications.

Controller shall comply with Article 1073.01 as amended herein.

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 or NEMA TS2 Type 2 design.

Railroad interconnected controllers and cabinets shall be assembled only by an approved traffic signal equipment supplier. 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.

Add the following to Article 1074.03 of the Standard Specifications:

(a) (6) Cabinets shall be designed for NEMA TS2 Type 1 or NEMA TS2 Type 2 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) (1) Revise “conflict monitor” to read “Malfunction Management Unit”

(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 – Shall be a 120VAC Single phase Modular filter Plug-in type, supplied from an approved vendor.

(b) (8) BIU – shall be secured by mechanical means.

(b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.

(b) (10) Switch Guards – All switches shall be guarded.

(b) (11) Heating – One (1) 200 watt, thermostatically-controlled, electric heater.

(b) (12) Lighting – One (1) LED Panel shall be placed inside the cabinet top panel and one (1) LED Panel shall be placed on each side of the pull-out drawer/shelf assembly located beneath the controller support shelf. The LED Panels shall be controlled by a door switch. The LED Panels shall be provided from an approved vendor.

(b) (13) The cabinet shall be equipped with a pull-out drawer/shelf assembly. A 1 ½ inch (38mm) deep drawer shall be provided in the cabinet, mounted directly beneath the controller support shelf. The drawer shall have a hinged top cover and shall be capable of accommodating one (1) complete set of cabinet prints and manuals. This drawer shall support 50 lbs. (23 kg) in weight when fully extended. The drawer shall open and close smoothly. Drawer dimensions shall make maximum use of available depth offered by the controller shelf and be a minimum of 18 inches (610mm) wide.

(b) (14) Plan & Wiring Diagrams – 12" x 15" (3.05mm x 4.06mm) moisture sealed container attached to door.

(b) (15) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.

(b) (16) Field Wiring Labels – All field wiring shall be labeled.

(b) (17) Field Wiring Termination – Approved channel lugs required.

(b) (18) Power Panel – Provide a nonconductive shield.

(b) (19) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.

(b) (20) Police Door – Provide wiring and termination for plug in manual phase advance switch.

(b) (21) Railroad Pre-Emption Test Switch – Shall be provided from an approved vendor

Installation.

Add the following to Article 857.03 of the Standard Specifications:

The Contractor shall arrange to install a standard voice-grade dial-up telephone line and all equipment to dial into the controller and have the controller dial out to the RAILROAD, FULL-ACTUATED CONTROLLER AND CABINET as called for on the traffic signal installation plans. If the traffic signal installation is part of a traffic signal system, a

telephone line is usually not required, unless a telephone line is called for on the traffic signal plans. The Contractor shall follow the requirements for the telephone service installation as contained in the current District One Traffic Signal Special Provision for Master Controller.

Basis of Payment.

This work will be paid for at the contract unit price each for RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE IV CABINET; RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE V CABINET; RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE SUPER P CABINET; RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE SUPER R CABINET; RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL; RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE V CABINET, SPECIAL; RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE SUPER P CABINET (SPECIAL) or RAILROAD, FULL-ACTUATED CONTROLLER AND TYPE SUPER R CABINET (SPECIAL).

MASTER CONTROLLER

Effective: May 22, 2002

Revised: July 1, 2015

860.01TS

General.

This work shall consist of furnishing and installing a master controller, meeting the requirements of the current District One Traffic Signal Special Provisions 857.01TS FULL-ACTUATED CONTROLLER (SPECIAL), 857.02TS FULL-ACTUATED CONTROLLER AND CABINET, and 857.02TS RAILROAD, FULL-ACTUATED CONTROLLER AND CABINET, including all necessary connections for proper operation.

If the intersection is part of an existing system and/or when specified in the plans, this work shall consist of furnishing and installing a(n) "_____" brand master controller.

Materials and Installation.

Revise Articles 860.02 and 860.03 of the Standard Specifications to read:

Only controllers supplied by one of the District approved closed loop equipment supplier 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 Specifications 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 33.6K baud rate or equal.

As soon as practical or within one week after the contract has been awarded, the Contractor shall contact Raymond Eaves, Administrative Support Manager in the District

One Business Services Section at Raymond.Eaves@illinois.gov or (847) 705-4011 to request a phone line installation. A follow-up contact shall include all required information pertaining to the phone installation and should be made as soon as possible or within one week after the initial request has been made. A copy of this contact must be emailed by the Contractor to the Traffic Signal Systems Engineer. The required information to be supplied shall include (but not limited to): An E911 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 will vary after the Business Services Section has received the Contractor's information and will depend on location and existing available facilities. It is, therefore, imperative that the phone line conduit and pull-string be installed by the Contractor as soon as possible. The contractor shall provide the Administrative Support Manager with an expected installation date

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).

Basis of Payment.

This work will be paid for at the contract unit price each for MASTER CONTROLLER or MASTER CONTROLLER (SPECIAL).

UNINTERRUPTABLE POWER SUPPLY, SPECIAL

Effective: January 1, 2013

Revised: July 1, 2015

862.01TS

This work shall be in accordance with section 862 of the Standard Specification except as modified herein

Add the following to Article 862.01 of the Standard Specifications:

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 10 (ten) hours.

Add the following to Article 862.02 of the Standard Specifications:

Materials shall be according to Article 1074.04 as modified in UNINTERRUPTABLE POWER SUPPLY, SPECIAL.

Add the following to Article 862.03 of the Standard Specifications:

The UPS shall additionally include, but not be limited to, a battery cabinet, where applicable. For Super-P (Type IV) and Super-R (Type V) cabinets, the battery cabinet is integrated to the traffic signal cabinet, and shall be included in the cost for the traffic signal cabinet of the size and type indicated on the plans.

The UPS shall provide reliable emergency power to the traffic signals in the event of a power failure or interruption.

Revise Article 862.04 of the Standard Specifications to read:

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.

At locations where UPS is installed and an Emergency Vehicle Priority System is in use, any existing incandescent confirmation beacons shall be replaced with LED lamps in accordance with the District One Emergency Vehicle Priority System specification at no additional cost to the contract. A concrete apron shall be provided and be in accordance with Articles 424 and 202 of the Standard Specifications. The concrete apron shall also, follow the District 1 Standard Traffic Signal Design Detail, Type D for Ground Mounted Controller Cabinet and UPS Battery Cabinet.

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the UPS including the addition of alarms.

Materials.

Revise Article 1074.04(a)(1) of the Standard Specifications to read:

The UPS shall be line interactive or double conversion 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 load. The UPS must be able to maintain the intersection's normal operating load plus 20 percent (20%) of the intersection's normal operating load. When installed at a railroad-interconnected

intersection the UPS must maintain the railroad pre-emption load, plus 20 percent (20%) of the railroad preemption-operating load. The total connected traffic signal load shall not exceed the published ratings for the UPS.

The UPS shall provide a minimum of 10 (ten) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 1000 W active output capacity, with 86 percent minimum inverter efficiency).

Revise the first paragraph of Article 1074.04(a)(3) of the Standard Specifications to read:

The UPS shall have a minimum of four (4) 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.

Revise Article 1074.04(a)(10) of the Standard Specifications to read:

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.

Revise Article 1074.04(a)(17) of the Standard Specifications to read:

When the intersection is in battery backup mode, the UPS shall bypass all internal cabinet lights, ventilation fans, cabinet heaters, service receptacles, any lighted street name signs, any automated enforcement equipment and any other devices directed by the Engineer.

Revise Article 1074.04(b)(2)b of the Standard Specifications to read:

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.

Revise Article 1074.04(b)(2)c of the Standard Specifications to read:

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.

Revise Article 1074.04(b)(2)e of the Standard Specifications to read:

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).

End of paragraph 1074.04(b)(2)e

The door shall be equipped with a two position doorstop, one a 90^{o} and one at 120^{o}.

Revise Article 1074.04(b)(2)g of the Standard Specifications to read:

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.

Add the following to Article 1074.04(b)(2) of the Standard Specifications:

j. The battery cabinet shall have provisions for an external generator connection.

Add the following to Article 1074.04(c) of the Standard Specifications:

(8) The UPS shall include a tip or kill switch installed in the battery cabinet, which shall completely disconnect power from the UPS when the switch is manually activated.

(9) The UPS shall include standard RS-232 and internal Ethernet interface.

(10) 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. Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.

(11) The bypass switch shall include an internal power transfer relay that allows removal of the battery back-up unit, while the traffic signal is connected to utility power, without impacting normal traffic signal operation.

Revise Article 1074.04(d)(3) of the Standard Specifications to read:

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.

Revise Article 1074.04(d)(4) of the Standard Specifications to read:

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.

Add the following to Article 1074.04(d) of the Standard Specifications:

(9) 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 10 (ten) 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.

(10) Battery Heater mats shall be provided, when gel cell type batteries are supplied.

Add the following to the Article 1074.04 of the Standard Specifications:

(e) Warranty. The warranty for an uninterruptable power supply (UPS) and batteries (full replacement) shall cover a minimum of 5 years from date the equipment is placed in operation.

(f) Installation. Bypass switch shall completely disconnect the traffic signal cabinet from the utility provider.

(g) The UPS shall be set-up to run the traffic signal continuously, without going to a red flashing condition, when switched to battery power unless otherwise directed by the Engineer. The Contractor shall confirm set-up with the Engineer. The continuous operation mode when switched to battery may require modification to unit connections and these modifications are included in the unit price for this item.

Revise Article 862.05 of the Standard Specifications to read:

Basis of Payment.

This work will be paid for at the contract unit price per each for UNINTERRUPTABLE POWER SUPPLY, SPECIAL or UNINTERRUPTABLE POWER SUPPLY AND CABINET, SPECIAL. Replacement of Emergency Vehicle Priority System confirmation beacons and any required modifications to the traffic signal controller shall be included in the cost of the UNINTERRUPTABLE POWER SUPPLY, SPECIAL or UNINTERRUPTABLE POWER SUPPLY AND CABINET, SPECIAL item. The concrete apron and earth excavation required shall be included in the cost of the UNINTERRUPTABLE POWER SUPPLY AND CABINET, SPECIAL item.

UNINTERRUPTABLE POWER SUPPLY, GROUND MOUNTED

Effective: January 1, 2012

Revised: July 1, 2015

862.02TS

This item shall consist of furnishing and installing an uninterruptable power supply. This item shall meet the same requirements as the current District One Traffic Signal Special Provision 862.01TS UNINTERRUPTABLE POWER SUPPLY, SPECIAL.

Materials shall be according to Article 1074.04 as modified in UNINTERRUPTABLE POWER SUPPLY, SPECIAL.

Installation.

The UPS shall be mounted on its own Type A square concrete foundation. The concrete foundation shall extend 2 inch past each side of the UPS cabinet and the edges shall have a continuous 1 inch chamfer at a 45 degree angle.

At locations where UPS is to be installed and Emergency Vehicle Priority System is in use, any existing incandescent confirmation beacons shall be replaced with LED lamps in accordance with the District One Emergency Vehicle Priority System specification at no additional cost to the contract. A concrete apron shall be provided with a dimension of 36 inches in front of the UPS cabinet, 5 inches deep, and a width sized appropriately to the width of the concrete foundation. The concrete apron shall follow Articles 424 and 202 of the Standard Specifications.

This item shall include any required modifications to an existing traffic signal controller.

Basis of Payment.

This item will be paid for at the contract unit price each for UNINTERRUPTABLE POWER SUPPLY, GROUND MOUNTED. Replacement of Emergency Vehicle Priority System confirmation beacons and any required modifications to the traffic signal controller shall be included in the cost of the UNINTERRUPTABLE POWER SUPPLY, GROUND MOUNTED item. The concrete foundation, concrete apron and earth excavation required shall be included in the cost of the UNINTERRUPTABLE POWER SUPPLY, GROUND MOUNTED item.

FIBER OPTIC CABLE

Effective: May 22, 2002

Revised: July 1, 2015

871.01TS

Add the following to Article 871.01 of the Standard Specifications:

The Fiber Optic cable shall be installed in conduit or as specified on the plans.

Add the following to Article 871.02 of the Standard Specifications:

The control cabinet distribution enclosure shall be 24 Port Fiber Wall Enclosure, unless otherwise indicated on plans. The fiber optic cable shall provide twelve fibers per tube for the amount of fibers called for in the Fiber Optic Cable pay item in the Contract. Fiber Optic cable may be gel filled or have an approved water blocking tape.

Add the following to Article 871.04 of the Standard Specifications:

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.. A minimum of 13.0 feet (4m) of extra cable length shall be provided for controller cabinets. The controller cabinet extra cable length shall be stored as directed by the Engineer.

Add the following to Article 871.06 of the Standard Specifications:

The distribution enclosure and all connectors will be included in the cost of the fiber optic cable.

Testing shall be in accordance with Article 801.13(d). Electronic files of OTDR signature traces shall be provided in the Final project documentation with certification from the Contractor that attenuation of each fiber does not exceed 3.5 dB/km nominal at 850nm for multimode fiber and 0.4 bd/km nominal at 1300nm for single mode fiber.

ELECTRIC CABLE

Effective: May 22, 2002

Revised: July 1, 2015

873.01TS

Delete “or stranded, and No. 12 or” from the last sentence of Article 1076.04 (a) of the Standard Specifications.

Add the following to the Article 1076.04(d) of the Standard Specifications:

Service cable may be single or multiple conductor cable.

GROUNDING EXISTING HANDHOLE FRAME AND COVER

Effective: May 22, 2002

Revised: July 1, 2015

873.02TS

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 Standard Specifications and District One Traffic Signal Special Provisions 806.01TS GROUNDING OF TRAFFIC SIGNAL SYSTEMS and 817.01TS GROUNDING CABLE.

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 UL listed grounding compression terminal. 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.

EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C

Effective: January 1, 2013

Revised: July 1, 2015

873.03TS

This work shall consist of furnishing and installing lead-in cable for light detectors installed at existing and/or proposed traffic signal installations as part of an emergency vehicle priority system. The work includes installation of the lead-in cables in existing

and/or new conduit. The electric cable shall be shielded and have (3) stranded conductors, colored blue, orange, and yellow with a stranded tinned copper drain wire. The cable shall meet the requirements of the vendor of the Emergency Vehicle Priority System Equipment.

Basis of Payment.

This work will be paid for at the contract unit price per foot for EMERGENCY VEHICLE PRIORITY SYSTEM LINE SENSOR CABLE, NO. 20 3/C, which price shall be payment in full for furnishing, installing and making all electrical connections necessary for proper operations.

RAILROAD INTERCONNECT CABLE

Effective: May 22, 2002

Revised: July 1, 2015

873.04TS

The cable shall meet the requirements of Section 873 of the Standard Specifications, except for the following:

Add to Article 873.02 of the Standard Specifications:

c) 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 873.06 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.

TRAFFIC SIGNAL POST

Effective: May 22, 2002

Revised: July 01, 2015

875.01TS

Add the following to Article 1077.01 (c) of the Standard Specifications:

Washers for post bases shall be the same size or larger than the nut.

Revise the first sentence of Article 1077.01 (d) of the Standard Specifications to read:

All posts and bases shall be steel and hot dipped galvanized according to AASHTO M 111. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with 851.01TS TRAFFIC SIGNAL PAINTING Special Provisions.

PEDESTRIAN PUSH-BUTTON POST

Effective: May 22, 2002

Revised: July 01, 2015

876.01TS

Revise the first sentence of Article 1077.02 (a) of the Standard Specifications to read:

The steel post shall be according to Article 1077.01. Washers for post bases shall be the same size or larger than the nut.

Revise the first sentence of Article 1077.02 (a) of the Standard Specifications to read:

All posts and bases shall be steel and hot dipped galvanized according to AASHTO M 111. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with 851.01TS TRAFFIC SIGNAL PAINTING Special Provisions.

MAST ARM ASSEMBLY AND POLE

Effective: May 22, 2002

Revised: July 01, 2015

877.01TS

Revise the second sentence of Article 1077.03 (a)(3) of the Standard Specifications to read:

Traffic signal mast arms shall be one piece construction, unless otherwise approved by the Engineer.

Add the following to Article 1077.03 (a)(3) of the Standard Specifications:

If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with 851.01TS TRAFFIC SIGNAL PAINTING Special Provisions.

CONCRETE FOUNDATIONS

Effective: May 22, 2002

Revised: July 01, 2015

878.01TS

Add the following to Article 878.03 of the Standard Specifications:

All anchor bolts shall be according to Article 1006.09, with all anchor bolts hot dipped galvanized a minimum of 12 in. (300 mm) at the threaded end.

Foundations used for Combination Mast Arm Poles shall provide an extra 2-1/2 inch (65 mm) raceway.

No foundation is to be poured until the Resident Engineer gives his/her approval as to the depth of the foundation.

Add the following to the first paragraph of Article 878.05 of the Standard Specifications:

The price shall include a concrete apron in front of the cabinet and UPS as shown in the plans or as directed by the engineer.

REMOVE AND REPLACE ANCHOR BOLTS

Effective: January 1, 2014

Revised: July 1, 2015

878.02TS

This item shall consist of replacing anchor rods at existing concrete foundations for traffic signal posts. At locations specified on the plans for new traffic signal post installation, the Contractor shall inspect the existing post foundations prior to removing the existing traffic signal post. The Contractor shall verify that the pattern, spacing, and condition of the existing anchor bolts are acceptable for reuse with a new post. The Contractor shall replace unacceptable anchor bolts as approved by the Engineer.

Anchor bolts shall be according to Article 1006.09 and shall be hot dipped galvanized.

Installation.

Existing anchor bolts shall be cut flush with the top of concrete foundation.

The bolt circle of the new anchor bolts shall be rotated a minimum of 2.5-inches away from the existing anchor bolts. New anchor bolts shall be ¾-inch diameter with minimum 9-inch embedment into the existing concrete foundation and 3-inch threaded length above the top of foundation. New anchor bolts shall be installed using a HIT-RE 500 exposed adhesive anchoring system.

Method of Measurement.

The removal and replacement of anchor bolts will be measured for payment as per each foundation requiring anchor bolt replacement. This shall include all anchor bolts replaced, labor, equipment, and materials required for replacing anchor bolts at an existing foundation as specified herein.

Basis of Payment.

This item will be paid for at the contract unit price each for REMOVE AND REPLACE ANCHOR BOLTS.

LIGHT EMITTING DIODE (LED) SIGNAL HEAD AND OPTICALLY PROGRAMMED LED SIGNAL HEAD

Effective: May 22, 2002

Revised: July 1, 2015

880.01TS

Materials.

Add the following to Section 1078 of the Standard Specifications:

1. LED modules proposed for use and not previously approved by IDOT District One will require independent testing for compliance to current VTCSH-ITE standards for the product and be Intertek ETL Verified. This would include modules from new vendors and new models from IDOT District One approved vendors.

2. The proposed independent testing facility shall be approved by IDOT District One. Independent testing must include a minimum of two (2) randomly selected modules of each type of module (i.e. ball, arrow, pedestrian, etc.) used in the District and include as a minimum Luminous Intensity and Chromaticity tests. However, complete module performance verification testing may be required by the Engineer to assure the accuracy of the vendor's published data and previous test results. An IDOT representative will select sample modules from the local warehouse and mark the modules for testing. Independent test results shall meet current ITE standards and vendor's published data. Any module failures

shall require retesting of the module type. All costs associated with the selection of sample modules, testing, reporting, and retesting, if applicable, shall be the responsibility of the LED module vendor and not be a cost to this contract.

3. All signal 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 signals 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.

4. 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 7 years from the date of traffic signal TURN-ON. 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 applicable successor ITE specifications, or show signs of entrance of moisture or contaminants within the first 7 years of the date of traffic signal TURN-ON shall be replaced or repaired. The vendor's written warranty for the LED signal modules shall be dated, signed by a vendor's representative and included in the product submittal to the State.

(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

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.

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

4. The LEDs utilized in the modules shall be AlInGaP technology for red and InGaN for green and amber 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. Operating voltage of the modules shall be 120 VAC. All parameters shall be measured at this voltage.

3. The modules shall be operationally compatible with currently used controller assemblies (solid state load switches, flashers, and conflict monitors).

4. 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.

5. 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.

6. LED arrows 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

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) or applicable successor ITE specifications 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.

Basis of Payment.

Add the following to the first paragraph of Article 880.04 of the Standard Specifications:

The price shall include furnishing the equipment described above, all mounting hardware and installing them in satisfactory operating condition.

Revise the second paragraph of Article 880.04 of the Standard Specifications to read:

If the work consists of retrofitting an existing polycarbonate traffic signal head with light emitting diodes (LEDs), it will be paid for as a SIGNAL HEAD, LED, RETROFIT, of the

type specified, and of the particular kind of material, when specified. Price shall be payment in full for removal of the existing module, furnishing the equipment described above including LED 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 in each signal face and the method of mounting.

FLASHING BEACON INSTALLATION, RELOCATION AND REMOVAL

Effective: January 1, 2007

Revised: July 1, 2015

880.02TS

This work shall consist of furnishing and installing a new flashing beacon installation, solar powered flashing beacon installation, relocation of existing flashing beacon, and/or the removal of the existing flashing beacon installation as shown on the plans and as described herein. The energy charges for the operation of the flashing beacon installation shall be paid for by the Department unless otherwise directed by the Engineer.

The installation, relocation and removal of flashing beacon installation shall be according to the applicable portions of Sections 800 and 1000 of the Standard Specifications for Road and Bridge Construction and District 1 Flashing Beacon Installation Details except as revised herein. LED signal heads shall be as modified in 880.01TS LED SIGNAL HEAD AND OPTICALLY PROGRAMMED LED SIGNAL HEAD Special Provision.

(a) Flashing Beacon Installation. This item shall consist of installing a post mounted 12 inch (300 mm) L.E.D. single section red or yellow flashing beacon on a new or existing post as shown on the plans or as directed by the Engineer. This item shall include furnishing and installing a flasher controller in an aluminum cabinet, or integrated within the signal head, 12 inch (300 mm) L.E.D. red or yellow signal section with a dimmer if required by the Engineer, and all other hardware necessary to complete the installation.

(b) Solar Powered Flashing Beacon Installation. This item shall consist of installation of a solar powered flashing beacon, post mounted as shown on the plans or as directed by the Engineer. This item shall consist of furnishing and installing a 12 inch (300 mm) single red or yellow flashing module on a new or existing post as shown on the plans or as directed by the Engineer. This item shall included furnishing and installing a flasher controller that is integrated within the signal head, with discrete solar panels, LED module, battery, electronics, compact housing and be capable of operating 24 hours, 7 days a week. The flasher unit shall be installed on standard

wood or metal posts. The flash pattern shall be MUTCD compliant and have alternate flash patterns available. 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.

(c) Relocate Existing Flashing Beacon. Relocation of an existing flashing beacon installation, as shown on the plans or as directed by the Engineer, shall meet the above requirements. This work shall include the complete relocation of the existing flashing beacon installation, the backfilling of the holes created by the removal of the poles, restoration of the surface to match the adjoining area.

(d) Remove Existing Flashing Beacon Installation Complete. Removal of an existing flashing beacon installation shall be as shown on the plans or as directed by the Engineer and shall be according to applicable portions of Section 895 of the Standard Specifications. This work shall include a complete removal of an existing flashing beacon installation, backfilling of the holes created by the removal of the poles and restoration of the surface to match the adjoining area. The flashing beacon installation will be removed only after the permanent signal installation is accepted for maintenance, or as directed by the Engineer.

Basis of Payment.

This work shall be paid for at the contract unit price each for FLASHING BEACON INSTALLATION; SOLAR POWERED FLASHING BEACON INSTALLATION; RELOCATE EXISTING FLASHING BEACON or REMOVE EXISTING FLASHING BEACON INSTALLATION COMPLETE. The price shall be payment in full for all labor and material necessary to complete the work described above.

LIGHT EMITTING DIODE (LED) PEDESTRIAN SIGNAL HEAD

Effective: May 22, 2002

Revised: July 1, 2015

881.01TS

Add the following to the third paragraph of Article 881.03 of the Standard Specifications:

No mixing of different types of pedestrian traffic signals or displays will be permitted.

Add the following to Article 881.03 of the Standard Specifications:

(a) Pedestrian Countdown Signal Heads.

(1) Pedestrian Countdown Signal Heads shall not be installed at signalized intersections where traffic signals and railroad warning devices are interconnected.

(2) Pedestrian Countdown Signal Heads shall be 16 inch (406mm) x 18 inch (457mm), for single units with glossy yellow or black polycarbonate housings. All pedestrian head housings shall be the same color (yellow or black) at the intersection. For new signalized intersections and existing signalized intersections where all 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.

(3) 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).

Materials.

Add the following to Article 1078.02 of the Standard Specifications:

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. 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.

5. If the controller preempts during the flashing Upraised Hand, the countdown will continue to count down without interruption.

6. The next cycle, following the preemption event, shall use the correct, initially programmed values.

7. 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.

8. The digits will go dark for one pedestrian cycle after loss of power of more than 1.5 seconds.

9. The countdown numerals shall be two (2) “7 segment” digits forming the time display utilizing two rows of LEDs.

10. 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.

11. 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.

12. In the event of a power outage, light output from the LED modules shall cease instantaneously.

13. 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.

14. 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.

Basis of Payment.

Add the following to the first paragraph of Article 881.04 of the Standard Specifications:

The price shall include furnishing the equipment described above, all mounting hardware and installing them in satisfactory operating condition.

Add the following to Article 881.04 of the Standard Specifications:

If the work consists of retrofitting an existing polycarbonate pedestrian signal head and pedestrian countdown signal head with light emitting diodes (LEDs), it will be paid for as a PEDESTRIAN SIGNAL HEAD, LED, RETROFIT, of the type specified, and of the particular kind of material, when specified. Price shall be payment in full for furnishing the equipment described above including LED modules, all mounting hardware, and installing them in satisfactory operating condition.

TRAFFIC SIGNAL BACKPLATE

Effective: May 22, 2002

Revised: July 1, 2015

882.01TS

Delete 1st sentence of Article 1078.03 of the Standard Specifications and add "All backplates shall be louvered, formed ABS plastic".

Add the following to the third paragraph of Article 1078.03 of the Standard Specifications. The retroreflective backplate shall not contain louvers.

Delete second sentence of the fourth paragraph of Article 1078.03 the Standard Specifications.

Add the following to the fourth paragraph of Article 1078.03 of the Standard Specifications:

When retro reflective sheeting is specified, it shall be Type ZZ sheeting according to Article 1091.03 and applied in preferred orientation for the maximum angularity according to the vendor's recommendations. The retroreflective sheeting shall be installed under a controlled environment at the vendor/equipment supplier before shipment to the contractor. The formed plastic backplate shall be prepared and cleaned, following recommendations of the retroreflective sheeting manufacturer.

DETECTOR LOOP

Effective: May 22, 2002

Revised: July 1, 2015

886.01TS

Procedure.

A minimum of seven (7) working days prior to the Contractor cutting loops, the Contractor shall mark the proposed loop locations 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.

Installation.

Revise Article 886.04 of the Standard Specifications to read:

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 water proof tag, from an approved vender, 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 cable.

(b) Loop sealant shall be two-component thixotropic chemically cured polyurethane from an approved vender. The sealant shall be installed 1/8 inch (3 mm) below the pavement surface. If installed above the surface the excess shall be removed immediately.

(c) Preformed. This work shall consist of furnishing and installing a rubberized or cross linked polyethylene heat resistant preformed traffic signal loop in accordance with the Standard Specifications, except for the following:

(d) 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 protective enclosure near the proposed handhole location. The protective enclosure shall provide sufficient protection from other construction activities and may be buried for additional protection.

(e) Handholes shall be placed next to the shoulder or back of curb when preformed detector loops enter the handhole. CNC, included in this pay item, shall be used to protect the preformed lead-ins from back of curb to the handhole.

(f) Preformed detector loops shall be factory assembled with ends capped and sealed against moisture and other contaminants. 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 or a similarly sized XLPE cable jacket. 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 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. For XLPE jacketed preformed loops, all splice connections shall be soldered, sealed, and tested before being sealed in a high impact glass impregnated plastic splice enclosure. 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.

Method of Measurement.

Add the following to Article 886.05 of the Standard Specifications:

Preformed detector loops will be measured along the detector loop embedded in the pavement, rather than the actual length of the wire. Detector loop measurements shall include the saw cut and the length of the detector loop wire to the edge of pavement. The detector loop 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.

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.

DETECTOR LOOP REPLACEMENT AND/OR INSTALLATION (ROADWAY GRINDING, RESURFACING, & PATCHING OPERATIONS)

Effective: January 1, 1985

Revised: July 1, 2015

886.02TS

The following Traffic Signal Special Provisions and the "District 1 Standard Traffic Signal Design Details" supplement the requirements of the State of Illinois "Standard Specifications for Road and Bridge Construction" Section 886 and 1079.

The intent of this Special Provision is to prescribe the materials and construction methods commonly used to replace traffic signal detector loops and replace magnetic signal detectors with detector loops during roadway resurfacing, grinding and patching operations. Loop detector replacement will not require the transfer of traffic signal maintenance from the District Electrical Maintenance Contractor to this contract's electrical contractor. Replacement of magnetic detector will require wiring revisions inside the control cabinet and therefore the transfer of maintenance will be required. 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 provided under this contract consists of furnishing and installing all traffic signal work as specified on the Plans and as specified herein in a manner acceptable and approved by the Engineer.

Notification of Intent to Work.

Contracts such as pavement grinding or patching which result in the destruction of traffic signal detection require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the detection removal, the Contractor shall notify the:

- Traffic Signal Maintenance and Operations Engineer at (847)705-4424
- IDOT Electrical Maintenance Contractor at (773) 287-7600

at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection.

Failure to provide proper notification may require the District's Electrical Maintenance Contractor to be called to investigate complaints of inadequate traffic signal timing. All costs associated with these expenses will be paid for by the Contractor at no additional expense to the Department according to Section 109 of the "Standard Specifications."

Acceptance of Material.

The Contractor shall provide:

1. All material approval requests shall be submitted a minimum of seven (7) days prior to the delivery of equipment to the job site, or within 30 consecutive calendar days after the contract is awarded, or within 15 consecutive calendar days after the preconstruction meeting, whichever is first.
2. Four (4) copies of a letter listing the vendor's name and model numbers of the proposed equipment shall be supplied. The letter will be reviewed by the Traffic Design Engineer to determine whether the equipment to be used is approved. The letters will be stamped as approved or not approved accordingly and returned to the Contractor.
3. One (1) copy of material catalog cuts.
4. The contract number, permit number or intersection location must be on each sheet of the letter and material catalog cuts as required in items 2 and 3.

Inspection of Construction.

When the road is open to traffic, except as otherwise provided in Section 801 and 850 of the Standard Specifications, the Contractor must request a turn-on and inspection of the completed detector loop installation at each separate location. This request must be made to the 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.

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. If this work is not completed in time, the Department reserves the right to have the work completed by others at the Contractor's expense.

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid price, 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 will be subject to removal and disposal at the Contractor's expense.

Restoration of Work Area.

Restoration of the traffic signal work area due to the detector loop installation and/or replacement shall be included in the cost of this item. All roadway surfaces such as shoulders, medians, sidewalks, pavement shall be replaced as shown in the plans or in kind. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded.

Removal, Disposal and Salvage of Existing Traffic Signal Equipment.

The removal, disposal, and salvage of existing traffic signal equipment shall be included in the cost of this item. All material and equipment removed shall become the property of the Contractor and disposed of by the Contractor outside the State's right-of-way. No additional compensation shall be provided to the Contractor for removal, disposal or salvage expense for the work in this contract.

DETECTOR LOOP REPLACEMENT.

This work shall consist of replacing existing detector loops which are destroyed during grinding, resurfacing, or patching operations.

If damage to the detector loop is unavoidable, replacement of the existing detection system will be necessary. This work shall be completed by an approved Electrical Contractor as directed by the Engineer.

Replacement of the loops shall be accomplished in the following manner: The Engineer shall mark the location of the replacement loops. The Traffic Signal Maintenance and Operations Engineer shall be called to approve loop locations prior to the cutting of the pavement. The Contractor may reuse the existing coilable non-metallic conduit (CNC) located between the existing handhole and the pavement if it hasn't been damaged. All burrs shall be removed from the edges of the existing conduit which could cause damage to the new detector loop during installation. If the existing conduit is damaged beyond repair, if it cannot be located, or if additional conduits are required for each proposed loop; the Contractor shall be required to drill through the existing pavement into the appropriate handhole, and install 1" (25 mm) CNC. This work and the required materials shall not be paid for separately but shall be included in the pay item Detector Loop Replacement. Once suitable CNC raceways is established, the loop may be cut, installed, sealed and spliced to the twisted-shielded lead-in cable in the handhole.

All loops installed in new asphalt pavement shall be installed in the binder course and not in the surface course. The edge of pavement or the curb shall be cut with a 1/4" (6.3 mm) deep x 4" (100 mm) saw-cut to mark location of each loop lead-in.

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 Traffic Signal Maintenance and Operations Engineer (847)705-4424 to inspect and approve the layout.

Loop detectors shall be installed according to the requirements of the "District 1 Standard Traffic Signal Design Details." Saw-cuts 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 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 water proof tag, from an approved vender, secured to each wire with nylon ties. The lead-in wire, including all necessary connections for proper operation, from the edge of pavement to the handhole, shall be included in the detector loop pay item.

Loop sealant shall be a two-component thixotropic chemically cured polyurethane. The sealant shall be installed 1/8" (3 mm) below the pavement surface. If installed above the surface the excess shall be removed immediately.

Round loop(s) 6 ft (1.8 m) diameter may be substituted for 6 ft (1.8 m) by 6 ft (1.8 m) square loop(s) and shall be paid for as 24 feet (7.2 m) of detector loop.

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.

Heat shrink splices shall be used according to the "District 1 Standard Traffic Signal Design Details."

Detector loop replacement shall be measured along the sawed slot in the pavement containing the loop cable up to the edge of pavement, rather than the actual length of the wire in the slot. Drilling handholes, sawing the pavement, furnishing and installing CNC to the appropriate handhole, cable splicing to provide a fully operable detector loop, testing and all trench and backfill shall be included in this item.

Basis of Payment.

Detector Loop Replacement shall be paid for at the contract unit price per foot (meter) of DETECTOR LOOP REPLACEMENT.

MAGNETIC DETECTOR REMOVAL AND DETECTOR LOOP INSTALLATION.

This work shall consist of the removal of existing magnetic detectors, magnetic detector lead-in cable and magnetic detection amplifiers and related control equipment wiring, installation of detector lead-in cable, detector loops, detector amplifiers and related equipment wiring. The detector loop, cable, and amplifier shall be installed according to the applicable portions of the "Standard Specifications" and the applicable portions of the Special Provision for "Detector Loop Replacement." All drilling of handholes, furnishing and installing CNC, cable splicing, trench and backfill, removal of equipment, and removing cable from conduit shall be included in this item.

Basis of Payment.

Magnetic Detector Removal and Detector Loop Installation shall be paid for at the contract unit price per foot (meter) for DETECTOR LOOP, TYPE I, per each for INDUCTIVE LOOP DETECTOR, and foot (meter) for ELECTRIC CABLE IN CONDUIT, LEAD-IN, NO. 14 1 PAIR.

EMERGENCY VEHICLE PRIORITY SYSTEM

Effective: May 22, 2002

Revised: July 1, 2015

887.01TS

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, or a 7 watt Par 30 LED flood lamp with a 15 degree or greater spread, maximum 7 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 4L.01 of the "Manual on Uniform Traffic Control Devices," and other applicable sections of future editions. 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 ±0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District.

This item shall include any required modifications to an existing traffic signal controller as a result of the addition of the EMERGENCY VEHICLE PRIORITY SYSTEM.

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. Any required modifications to the traffic signal controller shall be included in the cost of the LIGHT DETECTOR AMPLIFIER. 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.

RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTE M, DETECTOR UNIT

Effective: January 1, 2002

Revised: July 1, 2015

887.02TS

This item shall consist of relocating the existing emergency vehicle priority system, detector unit (single channel or dual channel) from its existing location to a new traffic signal post or mast arm assembly and pole, and connecting it to an emergency vehicle priority system, phasing unit. If the existing Emergency Vehicle Priority System, Detector Unit Assembly includes a Confirmation Beacon, the Confirmation Beacon shall also be relocated and connected to the Emergency Vehicle Priority System, Detector Unit and shall be included at no cost in this item.

The emergency vehicle system is not to be inoperative for more than 8 hours and the Contractor must notify the Municipality or Fire Protection District 72 hours prior to the disconnection of the equipment.

Basis of Payment.

This item will be paid for at the contract unit price each for RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM, DETECTOR UNIT.

RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM, PHASING UNIT

Effective: January 1, 2002

Revised: July 1, 2015

887.03TS

This item shall consist of relocating the existing emergency vehicle priority system phasing unit from an existing traffic signal controller cabinet to a new traffic signal controller cabinet, as indicated in the plans or as directed by the Engineer.

The work shall include disconnecting the emergency vehicle priority system phasing unit(s) and reconnecting it into the new traffic signal controller cabinet.

The emergency vehicle system is not to be inoperative for more than 8 hours and the Contractor must notify the Municipality or Fire Protection District 72 hours prior to the disconnection of the equipment. The Contractor must demonstrate to the satisfaction of the Engineer that the emergency vehicle system operates properly.

Basis of Payment.

This item will be paid for on a basis of one (1) each per intersection for RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM, PHASING UNIT.

CONFIRMATION BEACON

Effective: January 1, 2002

Revised: July 1, 2015

887.04TS

This item shall consist of furnishing and installing a Traffic Signal Emergency Confirmation Beacon (single channel or dual channel) at the locations specified on the plans and as described as follows for intersections which have existing emergency preemption systems previously installed.

Confirmation Beacon, Single Channel - Where the light detector is used to detect a single direction of traffic, one LED lamp for only that direction shall be provided. In cases where the detector covers opposing directions of traffic and has a single output, a separate lamp for each direction shall be provided but they shall have identical indications.

Confirmation Beacon, Dual Channel - A separate LED lamp with appropriate separate indications for each direction shall be provided.

It shall be the Contractor's responsibility to verify the existing brand of emergency vehicle equipment at the intersection and the confirmation beacons must be completely compatible with all existing components. The Confirmation Beacon shall consist of a 6 watt Par 38 LED flood lamp with a 30 degree light spread, or a 7 watt Par 30 LED flood lamp with a 15 degree or greater spread, maximum 7 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. No new holes may be drilled into signal poles, mast arms, or posts. The Confirmation Beacon shall be mounted to the existing light detector hardware as shown on the mounting detail in the plans. 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 4L.01 of the "Manual on Uniform Traffic Control Devices," and other applicable sections of future editions. The stopped pre-empted movements shall be signalized by a continuous indication.

Any modification required to the existing light detector installation to meet the requirements of the mounting detail shown in the plans shall be included in this item.

Basis of Payment.

This work will be paid for at the contract unit price per each for CONFIRMATION BEACON.

PEDESTRIAN PUSH-BUTTON

Effective: May 22, 2002

Revised: July 1, 2015

888.01TS

Description.

Revise Article 888.01 of the Standard Specifications to read:

This work shall consist of furnishing and installing a latching (single call) or non-latching (dual call) pedestrian push-button and a regulatory pedestrian instruction sign according to MUTCD, sign series R10-3e 9" x 15" sign with arrow(s) for a count-down pedestrian signal. The pedestrian station sign size without count-down pedestrian signals shall accommodate a MUTCD sign series R10-3b or R10-3d 9" x 12" sign with arrow(s).

Installation.

Add the following to Article 888.03 of the Standard Specifications:

A mounting bracket and/or extension shall be used to assure proper orientation when two pedestrian push buttons are required for one post. The price of the bracket and/or extension shall be included in the cost of the pedestrian push button. The contractor is not allowed to install a push-button assembly with the sign below the push-button in order to meet mounting requirements.

Materials.

Revise Article 1074.02(a) of the Standard Specifications to read:

The pedestrian push-button housing shall be constructed of aluminum alloy according to ASTM B 308 6061-T6 and powder coated yellow, unless otherwise noted on the plans. The housing shall be furnished with suitable mounting hardware.

Revise Article 1074.02(e) of the Standard Specifications to read:

Stations shall be designed to be mounted to a post, mast arm pole or wood pole. The station shall be aluminum and shall accept a 3 inch (75mm) round push-button assembly and a regulatory pedestrian instruction sign according to MUTCD, sign series R10-3e 9" x 15" sign with arrow(s) for a count-down pedestrian signal. The pedestrian station size without count-down pedestrian signals shall accommodate a MUTCD sign series R10-3b or R10-3d 9" x 12" sign with arrow(s).

Add the following to Article 1074.02 of the Standard Specifications:

(f) Location. Pedestrian push-buttons and stations shall be mounted to a post, mast arm pole or wood pole as shown on the plans and shall be fully ADA accessible from a paved or concrete surface. See the District's Detail sheets for orientation and mounting details.

Basis of Payment.

Revise Article 888.04 of the Standard Specifications to read:

This work will be paid for at the contract unit price per each for PEDESTRIAN PUSH-BUTTON or PEDESTRIAN PUSH-BUTTON, NON-LATCHING.

ACCESSIBLE PEDESTRIAN SIGNALS

Effective: April 1, 2003

Revised: July 1, 2015

888.02TS

Description.

This work shall consist of furnishing and installing pedestrian push button accessible pedestrian signals (APS) type. Each APS shall consist of an interactive vibrotactile pedestrian pushbutton with speaker, an informational sign, a light emitting diode (LED) indicator light, a solid state electronic control board, a power supply, wiring, and mounting hardware. The APS shall meet the requirements of the MUTCD and Sections 801 and 888 of the Standard Specifications, except as modified herein.

Electrical Requirements.

The APS shall operate with systems providing 95 to 130 VAC, 60 Hz and throughout an ambient air temperature range of -29 to +160 °F (-34 to +70 °C).

The APS shall contain a power protection circuit consisting of both fuse and transient protection.

Audible Indications.

A pushbutton locator tone shall sound at each pushbutton with volume settings a maximum of 5 dBA louder than ambient sound.

If two accessible pedestrian pushbuttons are placed less than 10 ft (3 m) apart or placed on the same pole, the audible walk indication shall be a speech walk message.

A clear, verbal message shall be used to communicate the pedestrian walk interval. This message shall sound throughout the WALK interval only. The verbal

message shall be modeled after: "Street Name." Walk Sign is on to cross "Street Name." No other messages shall be used to denote the WALK interval.

Where two accessible pedestrian pushbuttons are separated by at least 10 ft (3 m), the walk indication shall be an audible percussive tone. It shall repeat at 8 to 10 ticks per second with a dominant frequency of 880 Hz.

Automatic volume adjustments in response to ambient traffic sound level shall be provided up to a maximum volume of 100 dBA. Locator tone and verbal messages shall be no more than 5 dB louder than ambient sound.

Pedestrian Pushbutton.

Pedestrian pushbuttons shall be at least 2 in. (50 mm) in diameter or width. The force required to activate the pushbutton shall be no greater than 3.5 lb (15.5 N).

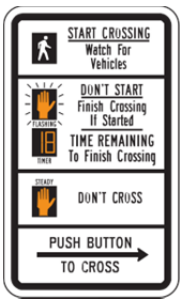
A red LED indicator shall be located on or near the pushbutton which, when activated, acknowledges the pedestrians request to cross the street. The recorded messages and roadway designations shall be confirmed with the engineer and included with submitted product data.

Signage.

A sign shall be located immediately above the pedestrian pushbutton and parallel to the crosswalk controlled by the pushbutton. The sign shall be one of the following standard MUTCD designs: R10-3b, R10-3d, or R10-3e.

R10-3b

R10-3d



R10-3e

Tactile Arrow.

A tactile arrow, pointing in the direction of travel controlled by a pushbutton, shall be provided either on the pushbutton or its sign.

Vibrotactile Feature.

The pushbutton shall pulse when depressed and shall vibrate continuously throughout the WALK interval.

Training.

The Contractor shall provide APS onsite training for Department personnel and person(s) or group that requested the installation of the APS. APS features and operation shall be demonstrated during the training. The training shall be presented by the APS equipment supplier. Time, date, and location of the training and demonstration shall be coordinated with the Engineer.

Basis of Payment.

This work will be paid for at the contract unit price each for a pedestrian push button, ACCESSIBLE PEDESTRIAN SIGNALS type and shall include furnishing, installation, mounting hardware, message programming, and training.

TEMPORARY TRAFFIC SIGNAL INSTALLATION

Effective: May 22, 2002

Revised: July 1, 2015

890.01TS

Revise Section 890 of the Standard Specifications to read:

Description.

This work shall consist of furnishing, installing, maintaining, and removing a temporary traffic signal installation as shown on the plans, including but not limited to temporary signal heads, emergency vehicle priority systems, interconnect, vehicle detectors, uninterruptable power supply, and signing. Temporary traffic signal controllers and cabinets interconnected to railroad traffic control devices shall be new. When temporary traffic signals will be operating within a county or local agency Traffic Management System, the equipment must be NTCIP compliant and compatible with the current operating requirements of the Traffic Management System.

General.

Only an approved controller equipment supplier will be allowed to assemble temporary traffic signal and railroad traffic signal cabinet. Traffic signal inspection and TURN-ON shall be according to 800.01TS TRAFFIC SIGNAL GENERAL REQUIREMENTS special provision.

Construction Requirements.

(a) Controllers.

1. Only controllers supplied by one of the District approved closed loop equipment supplier 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 existing monitoring software approved by IDOT District 1, installed in NEMA 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. All railroad interconnected temporary controllers and cabinets shall be new and shall satisfy the requirements of Article 857.02 of the Standard Specifications and as modified herein.

2. Only control equipment, including controller cabinet and peripheral equipment, supplied by one of the District approved closed loop equipment suppliers will be approved for use at temporary traffic signal locations. 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 the latest version software installed at the time of the signal TURN-ON.

(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 806 of the Standard Specifications and shall meet the requirements of the 806.01TS GROUNDING OF TRAFFIC SIGNAL SYSTEMS special provision.

(d) Traffic Signal Heads. All traffic signal sections shall be 12 inches (300 mm). Pedestrian signal sections shall be 16 inch (406mm) x 18 inch (457mm). Traffic signal sections shall be LED with expandable view, unless otherwise approved by the Engineer. Pedestrian signal heads shall be Light Emitting Diode (LED) Pedestrian Countdown Signal Heads except when a temporary traffic signal is installed at an intersection interconnected with a railroad grade crossing. When a temporary traffic signal is installed at an intersection interconnected with a railroad grade crossing, Light Emitting Diode (LED) Pedestrian Signal Heads shall be furnished. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Engineer. If no traffic staging is in place or will not be staged on the day of the turn on, the temporary traffic signal shall have the signal head displays, signal head placements and controller phasing match the existing traffic signal or shall be 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.

(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, including any required fiber splices and terminations, 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 cost of 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. Any temporary signal within an existing closed loop traffic signal system shall be interconnected to that system using similar brand control equipment at no additional cost to the contract.

3. Temporary wireless interconnect. The radio interconnect system shall be compatible with Eagle or Econolite controller closed loop systems. This work shall include all temporary wireless interconnect components, at the adjacent existing traffic signal(s) to provide a completely operational closed loop system. This work 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 the cost of TEMPORARY TRAFFIC SIGNAL INSTALLATION.

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 or existing 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 vendors recommendations.

(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 ±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 at all approaches of the intersection and as directed by the Engineer. Pedestrian push buttons shall be provided for all pedestrian signal heads/phases as directed by the Engineer. Microwave vehicle sensors or video vehicle detection system shall be approved by IDOT prior to Contractor 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. An equipment supplier 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) Uninterruptable Power Supply. All temporary traffic signal installations shall have Uninterruptable Power Supply (UPS). The UPS cabinet shall be mounted to the temporary traffic signal cabinet and shall be according to the applicable portions of Section 862 of the Standard Specifications and as modified in 862.01TS UNITERRUPTABLE POWER SUPPLY, SPECIAL Special Provision.

(i) 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. Any intersection regulatory signs that are required for the temporary traffic signal shall be provided as shown on the plans or as directed by the Engineer. Relocation, removing, bagging and installing the regulatory signs for the various construction stages shall be provided as shown on the plans or as directed by the Engineer. If Illuminated Street Name Signs exist they shall be taken down and stored by the contractor and reflecting street name signs shall be installed on the temporary traffic signal installation.

(j) Energy Charges. The electrical utility energy charges for the operation of the temporary 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.

(k) Maintenance. Maintenance shall meet the requirements of the Standard Specifications and 850.01TS MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION Special Provisions. Maintenance of temporary signals and of the existing signals shall be included in the cost of the TEMPORARY TRAFFIC SIGNAL INSTALLATION pay 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. 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 Operations (847) 705-4424 for an inspection of the installation(s).

(l) Temporary Traffic Signals for Bridge Projects. Temporary Traffic Signals for bridge projects shall follow the State Standards, Standard Specifications, Special Provisions and any plans for Bridge Temporary Traffic Signals included in the plans. The installation shall meet the Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION specification. In addition all electric cable shall be aerially 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 as shown in the plans, or as directed by the Engineer. Microwave vehicle sensors or video vehicle detection system may be used in place of detector loops as approved by the Engineer.

(m) 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 at no cost to the contract.

2. The controller and LED signal displays shall meet the applicable Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION special provision.

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 and other applicable portions of the currently adopted version of the Manual on Uniform Traffic Control Devices (MUTCD) and the Illinois MUTCD. The signal system shall be designed to continuously operate over an ambient temperature range between -30 ºF (-34 ºC) and 120 ºF (48 ºC). 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, the temporary wireless interconnect system, temporary fiber optic interconnect system, all material required, the installation and complete removal of the temporary traffic signal, and any changes required by the Engineer. Each intersection will be paid for separately.

TEMPORARY TRAFFIC SIGNAL TIMING

Effective: May 22, 2002

Revised: July 1, 2015

890.02TS

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, as well as impact to existing traffic signal timings caused by detours or other temporary conditions.

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 TIMING.

(a) Consultant shall attend temporary traffic signal inspection (turn-on) and/or detour meeting and conduct on-site implementation of the traffic signal timings.

(b) Consultant shall be responsible for making fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.

(c) Consultant shall provide monthly observation of traffic signal operations in the field.

(d) 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.

(e) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

(f) Return original timing plan once construction is complete.

Basis of Payment.

The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMING, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on and/or detour implemented, 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 and/or detour.

LED INTERNALLY ILLUMINATED STREET NAME SIGN

Effective: May 22, 2002

Revised: January 1, 2015

891.02TS

Description.

This work shall consist of furnishing and installing a LED internally illuminated street name sign.

Materials.

The illuminated street name sign shall be as follows.

(a) Description.

The LEDs shall be white in color. The LED internally illuminated street name sign shall display the designated street name clearly and legibly in the daylight hours without being energized and at night when energized. White translucent reflective sheeting sign faces with the street name applied in transparent green shall be installed on the street sign acrylic panels which shall be affixed to the interior of the sign enclosure. Hinged door(s) on the side of the sign shall be provided for easy access to perform general cleaning and maintenance operations. Illumination shall occur with LED Light Engine as specified.

(b) Environmental Requirements.

The LED lamp shall be rated for use in the ambient operating temperature range of -40 to +50°C (-40 to +122°F) for storage in the ambient temperature range of -40 to +75°C (-40 to +167°F).

(c) General Construction.

1. The LED components, power supply, and wiring harness shall be arranged as to allow for maintenance, up to and including the replacement of all three components, by the local Agency where the sign is installed. The LED Light Engine shall be mounted in the top and/or bottom of the sign housing and no components of the light source shall sit between the sign faces.

2. The assembly and manufacturing processes of the LED Light Engine shall be designed to ensure that all LED and electronic components are adequately supported to withstand mechanical shocks and vibrations in compliance with the specifications of the ANSI, C136.31-2001 standards.

(d) Mechanical Construction.

1. The sign shall be constructed using a weatherproof, aluminum housing consisting of an extruded aluminum with the maximum sign dimensions of 30” in height, 96” in length, 10.75” in depth (including the drip edge) and shall not weight more than 92 pounds. All corners are continuous TIG (Tungsten Inert Gas) welded to provide a weatherproof seal around the entire housing.

2. Two corners are continuous TIG welded with the other two screwed together to make one side of the door removable for installation of the sign face. The door is fastened to the housing on the bottom by a full length stainless steel hinge. The sign shall also be fabricated in a way to ensure that no components fall out while a technician is opening or working inside the sign enclosure. The door shall be held secure onto a 1” wide by 5/32” thick neoprene gasket by an appropriate number of quarter-turn fasteners to form a watertight seal between the door and the housing.

3. The sign face shall be constructed of .125” white translucent polycarbonate or acrylic. Sign legend shall be according to D1 Mast Arm Mounted Street Name Sign detail and MUTCD. The sign face legend background shall consist of translucent DG^3 white diamond grade sheeting (ASTM Type 9) and transparent green acrylic EC (electronic cut-able) film applied to the front of the sign face. The legend shall be framed by a white border. A logo symbol and/or name of the community may be included with approval of the Engineer.

4. All surfaces of the sign shall be powder coated.

5. All fasteners and hardware shall be corrosion resistant stainless steel. No special tools shall be required for routine maintenance.

6. All wiring shall be secured by insulated wire compression nuts or barrier type terminal blocks.

7. A wire entrance junction box shall be supplied with the sign assembly. The box may be supplied mounted to the exterior or interior of the sign and provide a weather tight seal.

8. A photoelectric switch shall be mounted in the control cabinet to control lighting functions for day and night display. Each sign shall be individually fused.

9. Brackets and Mounting: LED internally illuminated street name signs will be factory drilled to accommodate mast arm two-point support assembly mounting brackets.

(e) Electrical.

1. Photocell shall be rated 105-305V, turn on at 1.5 fcs. with a 3-5 second delay. A manufacturer's warranty of six (6) years shall be provided. Power consumption shall be no greater than 1 watt at 120V.

2. The LED Light Engine shall operate from a 60 +- 3 cycle AC line power over a voltage range of 80 to 135 Vac rms. Fluctuations in line voltage over the range of 80 to 135 Vac shall not affect luminous intensity by more than +- 10%.

3. Total harmonic distortion induced into the AC power line by the LED Light Engine, operated at a nominal operating voltage, and at a temperature of +25^{o}C (+77^{o}F), shall not exceed 20%.

4. The LED Light Engine shall cycled ON and OFF with a photocell as shown on the detail sheet and shall not exceed 120 Watts. The signs shall not be energized when traffic signals are powered by an alternate energy source such as a generator or uninterruptable power source (UPS). The signs shall be connected to the generator or UPS bypass circuitry.

(f) Photometric Requirements.

1. The entire surface of the sign panel shall be evenly illuminated. The average maintained luminous intensity measured across the letters, operating under the conditions defined in Environmental Requirements and Wattage Sections shall be of a minimum value of 100 cd/m^2.

2. The manufacturer shall make available independent laboratory test results to verify compliance to Voltage Range and Luminous Intensity Distribution Sections.

3. LED shall have a color temperature of 5200k nominal, CRI of 80 with a life expectancy of 75,000 hrs.

(g) Quality Assurance.

The LED Light Engine shall be manufactured in accordance with a vendor quality assurance (QA) program. The production QA shall include statistically controlled routine tests to ensure minimum performance levels of the LED Light Engine build to meet this specification. QA process and test result documentations shall be kept on file for a minimum period of seven (7) years. The LED Light Engine that does not satisfy the production QA testing performance requirements shall not be labeled, advertised, or sold as conforming to these specifications. Each LED Light Engine shall be identified by a manufacturer's serial number for warranty purposes. LED Light Engines shall be replaced or repaired if they fail to function as intended due to workmanship or material defects within the first sixty (60) months from the date of acceptance. LED Light Engines that exhibit luminous intensities less than the minimum value specified in Photometric Section within the first thirty-six (36) months from the date of acceptance shall be replaced or repaired.

Installation.

The sign can be mounted on most steel mast arm poles. Mounting on aluminum mast arm pole requires supporting structural calculations. Some older or special designed steel mast arm poles may require structural evaluation to assure that construction of the mast arm pole is adequate for the proposed additional loading. Structural calculations and other supporting documentation as determined by the Engineer shall be provided by the contractor for review by the Department.

The sign shall be located on a steel traffic signal mast arm no further than 8-feet from the center of the pole to the center of the sign at a height of between 16 to 18-feet above traveled pavement. Mounting hardware shall be from an approved vendor, utilizing stainless steel components.

Signs shall be installed such that they are not energized when traffic signals are powered by an alternate energy source such as a generator or uninterruptable power supply (UPS). The signs shall be connected to the generator or UPS bypass circuitry.

Basis of Payment.

This work will be paid for at the contract unit price each for LED INTERNALLY ILLUMINATED STREET NAME SIGN, of the length as specified in the contract plans which shall be payment in full for furnishing and installing the LED internally illuminated street name sign, complete with circuitry and mounting hardware including photo cell, circuit breaker, fusing, relay, connections and cabling as shown on the plans for proper operation and installation.

MODIFY EXISTING CONTROLLER CABINET

Effective: May 22, 2002

Revised: July 1, 2015

895.01TS

The work shall consist of modifying an existing controller cabinet as follows:

(a) Uninterruptable Power Supply (UPS). The addition of uninterruptable power supply (UPS) to an existing controller cabinet could require the relocation of the existing controller cabinet items to allow for the installation of the uninterruptable power supply (UPS) components inside the existing controller cabinet as outlined under Sections 862 and 1074.04 of the Standard Specifications and the wiring of UPS alarms.

(b) Light Emitting Diode (LED) Signal Heads, Light Emitting Diode (LED) Optically Programmed Signal Heads and Light Emitting Diode (LED) Pedestrian Signal Heads. The contractor shall verify that the existing load switches meet the requirements of Section 1074.03(b)(2) of the Standard Specifications and the recommended load requirements of the light emitting diode (LED) signal heads that are being installed at the existing traffic signal. If any of the existing load switches do not meet these requirements, they shall be replaced, as directed by the Engineer.

(c) Light Emitting Diode (LED), Signal Head, Retrofit. The contractor shall verify that the existing load switches meet the requirements of Section 1074.03(b)(2) of the Standard Specifications and the recommended load requirements of light emitting diode (LED) traffic signal modules, pedestrian signal modules, and pedestrian countdown signal modules as specified in the plans. If any of the existing load switches do not meet these requirements, they shall be replaced, as directed by the Engineer.

(d) This item shall include the upgrade of all non-railroad controller software to the latest version available at the time of the signal TURN-ON.

Basis of Payment.

Modifying an existing controller cabinet will be paid for at the contract unit price per each for MODIFY EXISTING CONTROLLER CABINET. This shall include all material and labor required to complete the work as described above, the removal and disposal of all items removed from the controller cabinet, as directed by the Engineer. The equipment for the Uninterruptable Power Supply (UPS) and labor to install it in the existing controller cabinet shall be included in the pay item Uninterruptable Power Supply, Special or Uninterruptable Power Supply, Ground Mounted.

REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT

Effective: May 22, 2002

Revised: July 1, 2015

895.02TS

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 one hard copy and one electronic file of a list of equipment that is to remain the property of the State, including model and serial numbers, where applicable. The Contractor 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 according to 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 Contractor 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 or delivery 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 at no cost to the contract.

MODIFY EXISTING TYPE "D" FOUNDATION

Effective: January 1, 2002

Modified: July 1, 2015

895.03TS

This item shall consist of the partial removal of an existing Type "D" Foundation at the location shown on the plans, or as directed by the Engineer. The existing foundation shall be removed to a depth of at least twelve (12) inches below finished grade. All concrete debris shall be disposed of outside the right-of-way. 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.

The removal of the existing traffic signal controller and cabinet shall be included in this pay item, as well as the removing and reinstalling of the existing cable(s) from conduit.

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 forming with anchor bolts and new conduit stubs provided to provide a concrete foundation for a Type IV or Type V cabinet. The Contractor shall follow the recommendations of the vendor, subject to approval of the Engineer, in forming and constructing the foundation.

Provide a three (3) foot by four (4) foot wide Portland cement concrete apron sidewalk, five (5) inches thick, on the side of the access door to the controller to facilitate servicing the controller and cabinet.

Anchor bolts shall be new and shall meet all the requirements of Section 1006.09 of the Standard Specifications.

Basis of Payment.

This work shall be paid for at the contract unit price each for MODIFY EXISTING TYPE "D" FOUNDATION.

REBUILD EXISTING HANDHOLE

Effective: January 1, 2002

Revised: July 1, 2015

895.04TS

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. The work shall consist of removing

the handhole frame and cover and the walls of the handhole to a depth of eight (8) inches below the finished grade.

Upon completion of the above work, four (4) holes, four (4) inches in depth and one half (1/2) inch in diameter, shall be drilled into the remaining concrete; one hole centered on each of the four handhole walls. Four (4) #3 steel dowels, eight (8) inches in length, shall be furnished and shall be installed in the drilled holes with a masonry epoxy.

All concrete debris shall be disposed of outside the right-of-way.

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 and as modified in 814.01TS HANDHOLES Special Provision. The existing frame and cover shall be replaced if it was damaged during removal or as determined by the Engineer.

Basis of Payment.

This work shall be paid for at the contract unit price each for REBUILD EXISTING HANDHOLE, 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.

REBUILD EXISTING HANDHOLE TO HEAVY-DUTY HANDHOLE

Effective: January 1, 2002

Revised: July 1, 2015

895.05TS

This item shall consist of partial removal of an existing concrete traffic signal handhole, reconstruction to the specifications of heavy duty handhole including new frame and cover, and bringing it to grade at location(s) shown in the plans or as directed by the Engineer. .This work shall consist of removing the existing handhole frame and cover and the walls of the handhole to a depth of fifteen (15) inches below the finished grade.

Upon completion of the above work, four (4) holes, four (4) inches in depth, and one-half (1/2) inch in diameter shall be drilled into the top of the remaining concrete; one hole centered into each of the four handhole walls. Four (4) #3 steel dowels eight inches in length, shall be furnished and installed in the drilled holes with a masonry epoxy.

All concrete debris shall be disposed of outside the right-of-way.

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 Traffic Signal 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 and as modified in 814.01TS HANDHOLES Special Provision.

Basis of Payment.

This work shall be paid for at the contract unit price each for REBUILD EXISTING HANDHOLE TO HEAVY-DUTY HANDHOLE.

LOOP DETECTOR NOTES

1. EACH PAIR OF LOOP WIRES SHALL BE PLACED IN A SEPARATE EMPTY COILABLE NONMETALLIC CONDUIT FROM THE EDGE OF PAVEMENT TO THE HANDHOLE. SPACING BETWEEN THE HOLES DRILLED IN THE PAVEMENT SHALL NOT BE LESS THAN 6" (150 mm). EMPTY COILABLE NONMETALLIC CONDUIT SHALL BE INCLUDED IN THE COST OF THE LOOP WIRE.

2. 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.

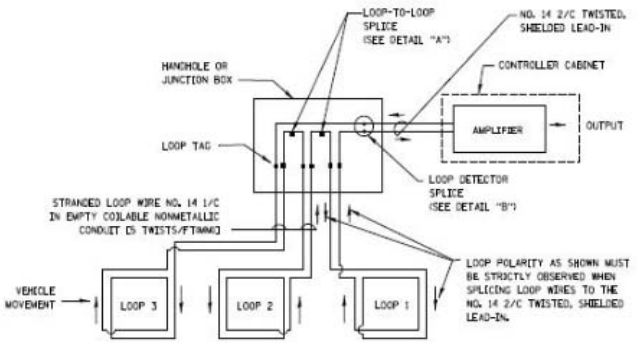
3. EACH LOOP LEAD-IN SHALL BE IDENTIFIED AND PERMANENTLY TAGGED IN THE HANDHOLE. EACH LEAD-IN CABLE TAG SHALL INDICATE THE LOCATION OF THE LOOP, LOOP ROTATION (CLOCKWISE/COUNTERCLOCKWISE), LOOP LEAD-IN DIRECTION (IN OR OUT), LOOP CABLE NUMBER AND LOCATION IN CABINET, AND NUMBER OF TURNS IN THE DETECTOR 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.

4. ALL LOOP CABLE SHALL BE FASTENED WITH PLASTIC TIE WRAP TO THE HANDHOLE HOOKS.

5. IN ASPHALT PAVEMENT, LOOPS SHOULD BE PLACED IN THE BINDER AND DIVEHOLES 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 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. WEDGES SHALL BE SPACED NO MORE THAN 18" (450 mm) APART.

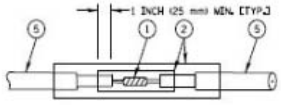
6. LOOP SPLICES SHALL BE SOLDERED USING A SOLDERING IRON. BLOW TORCHES OR OTHER DEVICES WHICH OXIDIZE COPPER CABLE SHALL NOT BE ALLOWED FOR SOLDERING OPERATIONS. SEE DETAIL BELOW RIGHT.

7. 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.

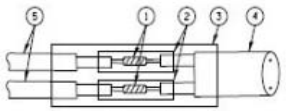


DETECTOR LOOP WIRING SCHEMATIC

- 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.

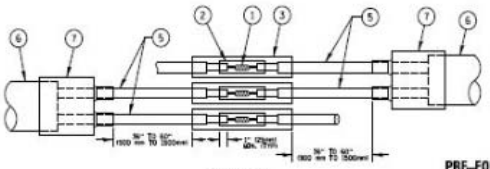


DETAIL "A"
LOOP-TO-LOOP SPLICE



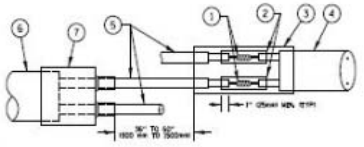
DETAIL "B"
LOOP-TO-CONTROLLER SPLICE

TYPE I LOOP



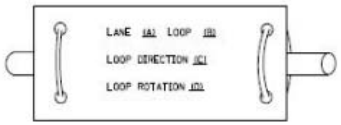
DETAIL "A"
LOOP-TO-LOOP SPLICE

PRE-FORMED LOOP



DETAIL "B"
LOOP-TO-CONTROLLER SPLICE

LOOP LEAD-IN CABLE TAG



A. LANE 1 IS THE LANE CLOSEST TO THE CENTERLINE OF THE ROADWAY

B. LOOP #1 IS THE LOOP IN THE LANE CLOSEST TO THE INTERSECTION.

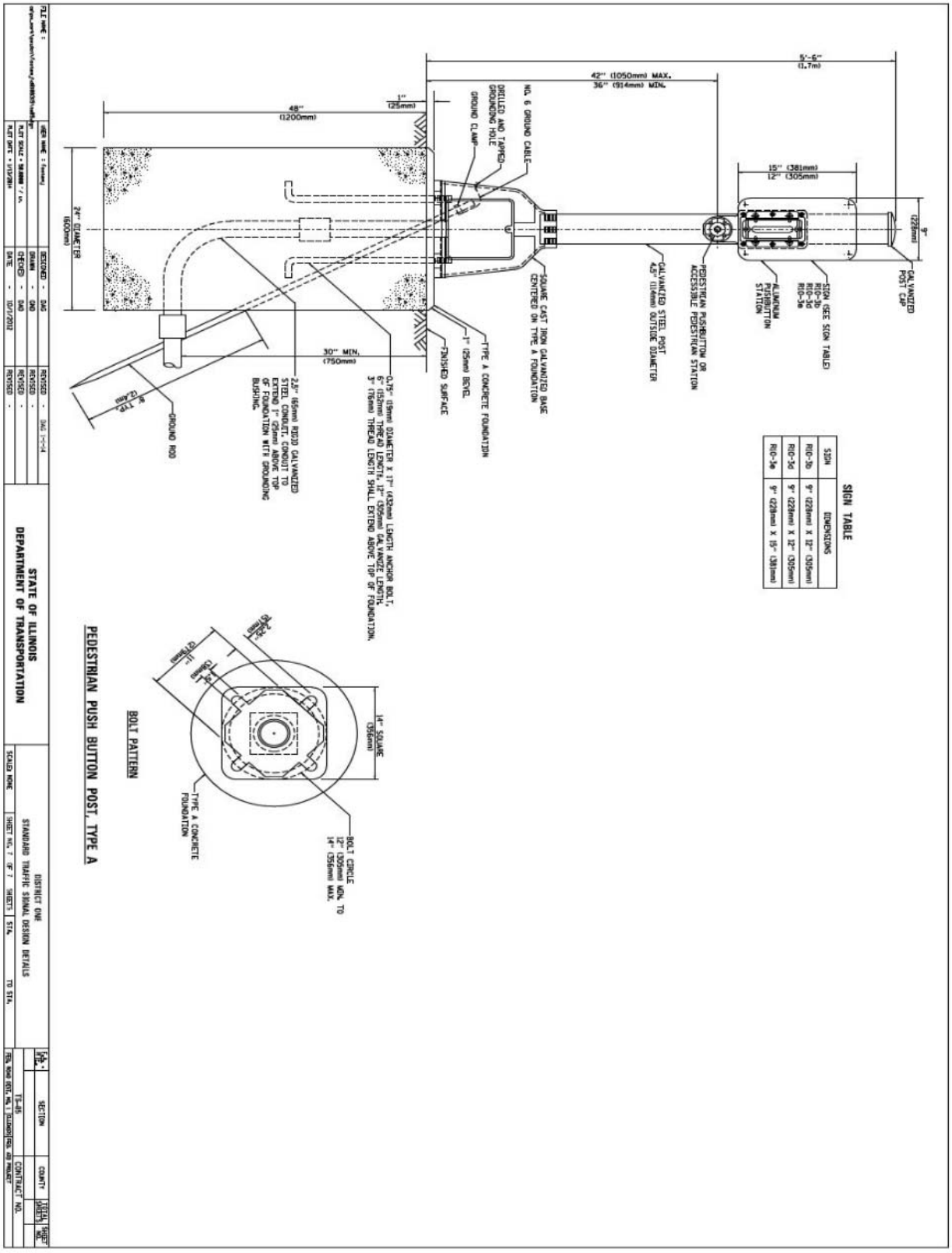
C. LABEL LOOP CABLE "IN" OR LOOP CABLE "OUT".

D. LABEL LOOP CABLE CLOCKWISE OR LOOP CABLE COUNTERCLOCKWISE.

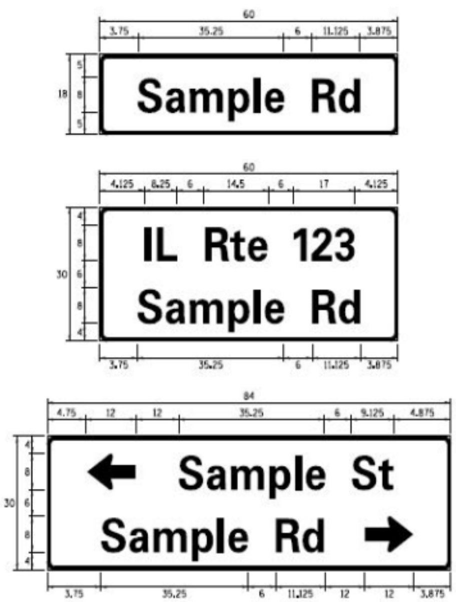
LOOP DETECTOR SPLICE

1. WESTERN UNION SPLICE SOLDERED WITH ROSIN CORE FLUX. ALL EXPOSED SURFACES OF THE SOLDER SHALL BE SMOOTH. THE WESTERN UNION SPLICES SHALL BE STAGGERED.
2. WCSMN 30/100 HEAT SHRINK TUBE, MINIMUM LENGTH 3" (75 mm), UNDERWATER GRADE.
3. WCS 200/750 HEAT SHRINK TUBE, MINIMUM LENGHT 6" (150 mm), UNDERWATER GRADE.
4. NO. 14 2/C TWISTED, SHIELDED CABLE.
5. LOOP CONDUCTOR WITH FLEXIBLE PLASTIC TUBE.
6. PRE-FORMED LOOP
7. XL POLYOLEFIN 2 CONDUCTOR BREAKOUT SEALS. TYCO CBR-2 OR APPROVED EQUAL

FILE NAME =	USER NAME =	DESIGNED - DAD	REVISED - DAC 1-1-14	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DISTRICT ONE STANDARD TRAFFIC SIGNAL DESIGN DETAILS		Fed. Aid No.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - BCK	REVISED -								
	PLOT SCALE = 50.0000 ' / in.	CHECKED - DAD	REVISED -					TS-05	CONTRACT NO.		
	PLOT DATE = 1/13/2014	DATE - 10-29-09	REVISED -		SCALE: NONE	SHEET NO. 2 OF 7 SHEETS	STA.	TO STA.	FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT


SIGN TABLE
SIGN
DIMENSIONS
R10-3b
9" (229mm) X 12" (305mm)
R10-3d
9" (229mm) X 12" (305mm)
R10-3e
9" (229mm) X 15" (381mm)
5'-6" (1.7m)
42" (1050mm) MAX.
36" (914mm) MIN.
15" (381mm)
12" (305mm)
9" (229mm)
GALVANIZED POST CAP
SIGN (SEE SIGN TABLE)
R10-3b
R10-3d
R10-3e
ALUMINUM PUSHBUTTON STATION
PEDESTRIAN PUSHBUTTON OR ACCESSIBLE PEDESTRIAN STATION
GALVANIZED STEEL POST 4.5" (114mm) OUTSIDE DIAMETER
SQUARE CAST IRON GALVANIZED BASE CENTERED ON TYPE A FOUNDATION
TYPE A CONCRETE FOUNDATION
1" (25mm) BEVEL
FINISHED SURFACE
NO. 6 GROUND CABLE
DRILLED AND TAPPED GROUNDING HOLE
GROUND CLAMP
1" (25mm)
48" (1200mm)
24" DIAMETER (610mm)
30" MIN. (750mm)
0.75" (19mm) DIAMETER X 17" (432mm) LENGTH ANCHOR BOLT, 6" (152mm) THREAD LENGTH, 12" (305mm) GALVANIZE LENGTH. 3" (76mm) THREAD LENGTH SHALL EXTEND ABOVE TOP OF FOUNDATION.
2.5" (65mm) RIGID GALVANIZED STEEL CONDUIT TO EXTEND 1" (25mm) ABOVE TOP OF FOUNDATION WITH GROUNDING BUSHING.
GROUND ROD
8' TYP. (2.4m)
PEDESTRIAN PUSH BUTTON POST, TYPE A
BOLT PATTERN
14" SQUARE (356mm)
TYPE A CONCRETE FOUNDATION
BOLT CIRCLE 12" (305mm) MIN. TO 14" (356mm) MAX.
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DISTRICT ONE
STANDARD TRAFFIC SIGNAL DESIGN DETAILS
SCALE: NONE
SHEET NO. 7 OF 7 SHEETS
STA.
TO STA.
SECTION
COUNTY
CONTRACT NO.
ILLINOIS FED. AID PROJECT
DESIGNED - BMG
DRAWN - GMD
CHECKED - BMG
DATE - 10/1/2012
REVISED
REVISED
REVISED
REVISED

SIGN PANEL – TYPE 1 OR TYPE 2



DESIGN SERIES	AREA (SQ FT)	SIGN PANEL TYPE	SHEETING TYPE	QTY. REQUIRED
D OR C	-	1 OR 2	ZZ	-

COMMON STREET NAME ABBREVIATIONS AND WIDTHS

NAME	ABBREVATION	WIDTH (INCH)	
		SERIES "C"	SERIES "D"
AVENUE	Ave	15.000	18.250
BOULEVARD	Blvd	17.125	20.000
CIRCLE	Clr	11.125	13.000
COURT	Ct	8.250	9.625
DRIVE	Dr	8.625	10.125
HIGHWAY	Hwy	18.375	22.000
ILLINOIS	IL	7.000	8.250
LANE	Ln	9.125	10.750
PARKWAY	Pkwy	23.375	27.375
PLACE	Pl	7.125	7.750
ROAD	Rd	9.625	11.125
ROUTE	Rte	12.625	14.500
STREET	St	8.000	9.125
TERRACE	Ter	12.625	14.625
TRAIL	Tr	7.750	9.125
UNITED STATES	US	10.375	12.250

GENERAL NOTES

1. WHERE MAST ARM MOUNTED STREET NAME SIGNS ARE SPECIFIED, THE MAST ARM ASSEMBLY AND POLES SHALL BE DESIGNED TO SUPPORT THE LOADINGS CALLED FOR ON STANDARDS 877001, 877002, 877006, 877011 AND 877012, AS APPLICABLE, PLUS TWO (2) SIGN PANELS 2'-6" x 8'-0" MOUNTED AS SHOWN. THE DESIGN SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CURRENT "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS FOR 80 M.P.H. WIND VELOCITY.

2. ALL SIGNS SHALL CONSIST OF A WHITE LEGEND AND BORDER (TYPE ZZ SHEETING) ON A GREEN BACKGROUND (TYPE ZZ SHEETING)

3. THE SIGN LENGTH SHALL BE IN 6-INCH INCREMENTS, BUT THE OVERALL LENGTH SHALL NOT EXCEED 8'-0". ALL BORDERS SHALL BE 3/4" WIDE. CORNER RADIUS SHALL BE 1-7/8". THE SPACING BETWEEN THE WORDS SHOULD BE 6", IF POSSIBLE, BUT MAY BE REDUCED TO 5" WHEN SPACING IS CRITICAL. A MINIMUM OF 2-1/2" SHALL BE INCLUDED BETWEEN THE WORD AND THE RIGHT AND LEFT EDGES OF THE SIGN.

4. A PREFERRED METHOD FOR THE SIGN DESIGN IS TO USE SERIES "D" LETTER ON A ONE-LINE SIGN 18" IN HEIGHT AND A MAXIMUX OF 8'-0" IN WIDTH. IF SERIES "D" DOES NOT FIT ON A 8'-0" SIGN, THEN SERIES "C" SHOULD BE TRIED. IF SERIES "C" DOES NOT FIT ON A 8'-0" SIGN, A 30" HIGH TWO-LINE SIGN CAN BE USED. THE CROSSROAD DESIGNATION AS TO STREET, AVENUE, ETC. SHOULD BE SPELLED OUT ON THE SECOND LINE, IF THERE IS SPACE AVAILABLE.

5. LED ILLUMINATED STREET NAME SIGNS CAN BE USED IN PLACE OF REGULAR SIGN PANELS BUT ANY SPECIAL WORDING AND SYMBOLOGY MUST BE APPROVED BY THE DEPARTMENT. GENERAL DESIGN REQUIREMENT AS LISTED ABOVE (COLOR, FONT, SIZE, ETC.) MUST BE FOLLOWED.

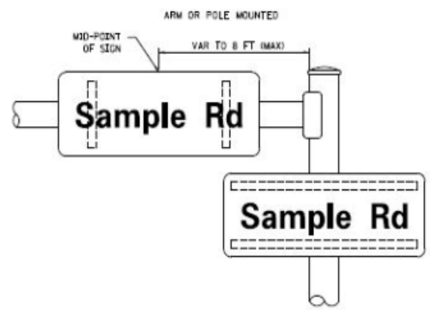
6. SIGNFIX ALUMINUM CHANNEL FRAMING SYSTEM SHALL BE USED FOR ALL SIGNS ATTACHED TO SIGNAL POLES AND POSTS.

LOCAL SUPPLIERS:	PARTS LISTING:	
- J.O. HERBERT COMPANY, INC MIDLOTHIAN, VA	SIGN CHANNEL	PART #HPN053 (MED. CHANNEL)
	SIGN SCREWS	1/4" x 14 x 1" H.W.H. #3 SELF TAPPING WITH NEOPRENE WASHER
- WESTERN REMAC, INC. WOODRIDGE, IL	BRACKETS	PART #HPN034 (UNIVERSAL) CHANNEL CLAMPS WITH STAINLESS STEEL STRAPPING

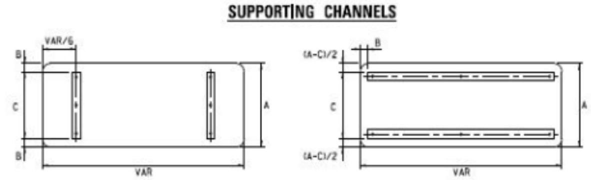
OTHER BRANDS OF MOUNTING HARDWARE ARE ACCEPTABLE, BASED UPON THE DEPARTMENT'S APPROVAL AND COMPATIBILITY WITH THE CHANNEL/BRACKET OF THE ABOVE PRODUCT.

MOUNTING LOCATION

ARM OR POLE MOUNTED



SUPPORTING CHANNELS



A	B	C
18"	2"	14"
30"	2"	24"

A	B	C
18"	2"	12"
30"	2"	22"

STANDARD ALPHABETS SPACING CHART

(8") UPPER CASE AND (6") LOWER CASE

FHWA SERIES "C"				FHWA SERIES "D"			
CHARACTER	LEFT SPACING (INCH)	WIDTH (INCH)	RIGHT SPACING (INCH)	CHARACTER	LEFT SPACING (INCH)	WIDTH (INCH)	RIGHT SPACING (INCH)
A	0.240	5.122	0.240	A	0.240	6.804	0.240
B	0.880	4.482	0.480	B	0.960	5.446	0.400
C	0.720	4.482	0.720	C	0.800	5.446	0.800
D	0.880	4.482	0.720	D	0.960	5.446	0.800
E	0.880	4.082	0.480	E	0.960	4.962	0.400
F	0.880	4.082	0.240	F	0.960	4.962	0.240
G	0.720	4.482	0.720	G	0.800	5.446	0.800
H	0.880	4.482	0.880	H	0.960	5.446	0.960
I	0.880	1.120	0.880	I	0.960	1.280	0.960
J	0.240	4.082	0.880	J	0.240	5.122	0.960
K	0.880	4.482	0.480	K	0.960	5.604	0.400
L	0.880	4.082	0.240	L	0.960	4.962	0.240
M	0.880	5.284	0.880	M	0.960	6.244	0.960
N	0.880	4.482	0.880	N	0.960	5.446	0.960
O	0.720	4.722	0.720	O	0.800	5.684	0.800
P	0.880	4.482	0.720	P	0.960	5.446	0.240
Q	0.720	4.722	0.720	Q	0.800	5.684	0.800
R	0.880	4.482	0.480	R	0.960	5.446	0.400
S	0.480	4.482	0.480	S	0.400	5.446	0.400
T	0.240	4.082	0.240	T	0.240	4.962	0.240
U	0.880	4.482	0.880	U	0.960	5.446	0.960
V	0.240	4.962	0.240	V	0.240	6.084	0.240
W	0.240	6.084	0.240	W	0.240	7.124	0.240
X	0.240	4.722	0.240	X	0.400	5.446	0.400
Y	0.240	5.122	0.240	Y	0.240	6.884	0.240
Z	0.480	4.482	0.480	Z	0.400	5.446	0.400
a	0.320	3.842	0.640	a	0.400	4.562	0.720
b	0.720	4.082	0.480	b	0.800	4.802	0.480
c	0.480	4.002	0.240	c	0.480	4.722	0.240
d	0.480	4.082	0.720	d	0.480	4.802	0.800
e	0.480	4.082	0.320	e	0.480	4.722	0.320
f	0.320	2.480	0.160	f	0.320	2.882	0.160
g	0.480	4.082	0.720	g	0.480	4.802	0.800
h	0.720	4.082	0.640	h	0.800	4.722	0.720
i	0.720	1.120	0.720	i	0.800	1.280	0.800
j	0.000	2.320	0.720	j	0.000	2.642	0.800
k	0.720	4.322	0.160	k	0.800	5.122	0.160
l	0.720	1.120	0.720	l	0.800	1.280	0.800
m	0.720	6.724	0.640	m	0.800	7.926	0.720
n	0.720	4.082	0.640	n	0.800	4.722	0.720
o	0.480	4.082	0.480	o	0.480	4.882	0.480
p	0.720	4.082	0.480	p	0.800	4.802	0.480
q	0.480	4.082	0.720	q	0.480	4.802	0.800
r	0.720	2.642	0.160	r	0.800	3.042	0.160
s	0.320	3.362	0.240	s	0.320	3.762	0.240
t	0.080	2.882	0.080	t	0.080	3.202	0.080
u	0.640	4.082	0.720	u	0.720	4.722	0.800
v	0.160	4.722	0.160	v	0.160	5.684	0.160
w	0.160	7.524	0.160	w	0.160	9.046	0.160
x	0.000	5.202	0.000	x	0.000	6.244	0.000
y	0.160	4.962	0.160	y	0.160	6.004	0.160
z	0.240	3.362	0.240	z	0.240	4.002	0.240
1	0.720	1.680	0.880	1	0.800	2.000	0.960
2	0.480	4.482	0.480	2	0.800	5.446	0.800
3	0.480	4.482	0.480	3	1.440	5.446	0.800
4	0.240	4.962	0.720	4	0.160	6.004	0.960
5	0.480	4.482	0.480	5	0.800	5.446	0.800
6	0.720	4.482	0.720	6	0.800	5.446	0.800
7	0.240	4.482	0.720	7	0.560	5.446	0.560
8	0.480	4.482	0.480	8	0.800	5.446	0.800
9	0.480	4.482	0.480	9	0.800	5.446	0.800
0	0.720	4.722	0.720	0	0.800	5.684	0.800
-	0.240	2.802	0.240	-	0.240	2.802	0.240

FILE NAME : Default	USER NAME :	DESIGNED - LP/IP	REVISED -
		DRAWN - LP	REVISED -
	PLOT SCALE	CHECKED - IP	REVISED -
	PLOT DATE = 9/22/2014	DATE - 10/01/2014	REVISED -

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

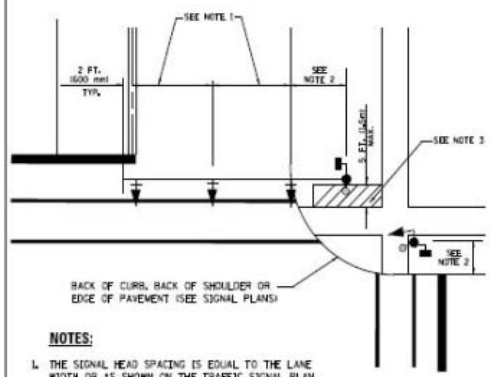
DISTRICT ONE
MAST ARM MOUNTED STREET NAME SIGNS

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO.
TS-02 | CONTRACT NO.
ILLINOIS FED. AID PROJECT

TRAFFIC SIGNAL MAST ARM AND SIGNAL POST

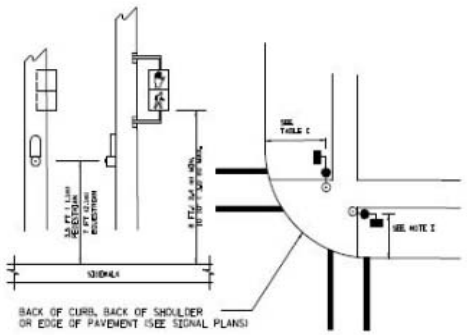
MAST ARM MOUNTED SIGNALS IN EXISTING, PROPOSED OR FUTURE SIDEWALK/BICYCLE PATH AREA, INTERSECTION SHOWN WITH PEDESTRIAN SIGNALS AND PEDESTRIAN PUSHBUTTON DETECTORS.



NOTES:

1. THE SIGNAL HEAD SPACING IS EQUAL TO THE LANE WIDTH OR AS SHOWN ON THE TRAFFIC SIGNAL PLAN.
2. REFER TO THE TRAFFIC SIGNAL EQUIPMENT OFFSET TABLE.
3. PROVIDE A LEVEL ALL-WEATHER SURFACE (CONCRETE SIDEWALK, ASPHALT BICYCLE PATH SURFACE OR MATCHING MATERIAL TO THE ADJACENT SURFACE) UP TO THE MAST ARM SHAFT OR THE SIGNAL POST.
4. THE FACE OF THE PEDESTRIAN PUSHBUTTON SHALL BE PARALLEL TO THE CROSSWALK TO BE USED.
5. THE LOCATIONS AND INSTALLATION OF PEDESTRIAN SIGNAL HEADS AND PEDESTRIAN PUSHBUTTONS SHALL MEET THE REQUIREMENTS OF THE MUTCD AND INFORMATION FOUND IN THE "AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES."

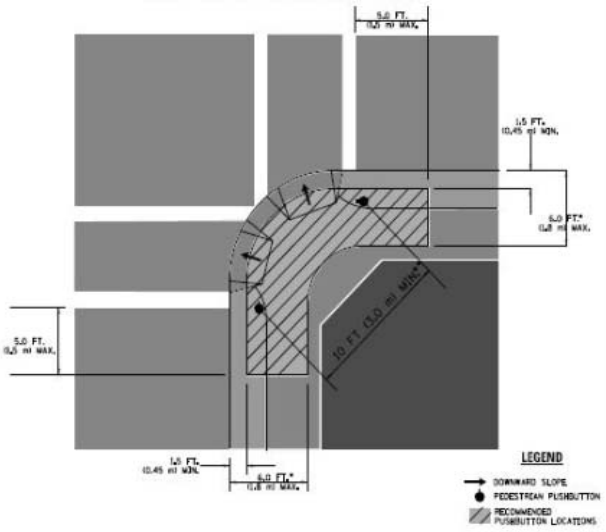
PEDESTRIAN SIGNAL POST AND PEDESTRIAN PUSH BUTTON POST



NOTES:

1. REFER TO THE TRAFFIC SIGNAL EQUIPMENT OFFSET TABLE.
2. PROVIDE A LEVEL ALL-WEATHER SURFACE (CONCRETE SIDEWALK, ASPHALT BICYCLE PATH SURFACE OR MATCHING MATERIAL TO THE ADJACENT SURFACE) UP TO THE PEDESTRIAN SIGNAL POST OR THE PEDESTRIAN PUSH BUTTON POST.
3. THE FACE OF THE PEDESTRIAN PUSHBUTTON SHALL BE PARALLEL TO THE CROSSWALK TO BE USED.
4. THE LOCATIONS AND INSTALLATION OF PEDESTRIAN SIGNAL HEADS AND PEDESTRIAN PUSHBUTTONS SHALL MEET THE REQUIREMENTS OF THE MUTCD AND INFORMATION FOUND IN THE "AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES."

RECOMMENDED PUSHBUTTON LOCATIONS



* WHERE THERE ARE CONSTRAINTS THAT MAKE IT IMPRACTICAL TO PLACE THE PEDESTRIAN PUSHBUTTON BETWEEN 1.5 FT (0.45 m) AND 6 FT (1.8 m) FROM THE EDGE OF THE CURB, SHOULDER, OR PAVEMENT, IT SHOULD NOT BE FURTHER THAN 10 FT (3 m) FROM THE EDGE OF CURB, SHOULDER, OR PAVEMENT.

** WHERE THERE ARE CONSTRAINTS ON A PARTICULAR CORNER THAT MAKE IT IMPRACTICAL TO PROVIDE THE 10 FT (3 m) SEPERATION BETWEEN THE TWO PEDESTRIAN PUSHBUTTONS, THE PUSHBUTTONS MAY BE PLACED CLOSER TOGETHER OR ON THE SAME POLE.

NOTES:

1. PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED WITH THE BOTTOM OF THE SIGNAL HOUSING INCLUDING BRACKETS NOT LESS THAN 8 FT (2.4 m) OR MORE THAN 10 FT (3 m) ABOVE SIDEWALK LEVEL, AND SHALL BE POSITIONED AND ADJUSTED TO PROVIDE MAXIMUM VISIBILITY AT THE BEGINNING OF THE CONTROLLED CROSSWALK.
2. THE BOTTOM OF THE SIGNAL HOUSING (INCLUDING BRACKETS) OF A VEHICULAR SIGNAL FACE THAT IS NOT LOCATED OVER A HIGHWAY SHALL BE AT LEAST 8 FT (2.4 m) BUT NOT MORE THAN 19 FT (5.8 m) ABOVE THE SIDEWALK OR, IF THERE IS NO SIDEWALK, ABOVE THE PAVEMENT GRADE AT THE CENTER OF THE ROADWAY.
3. THE BOTTOM OF THE SIGNAL HOUSING AND ANY RELATED ATTACHMENTS TO A SIGNAL FACE LOCATED OVER ANY PORTION OF A HIGHWAY SHALL BE ACCORDING TO CURRENT STATE STANDARDS 877001, 877002, 877006, 877011 AND 877012 WITH A MINIMUM OF 16 FT (5.0 m) AND A MAXIMUM OF 18 FT. (5.5 m) FROM THE HIGHEST POINT OF PAVEMENT.
4. THE BOTTOM OF THE TEMPORARY SPAN WIRE MOUNTED SIGNAL HOUSING AND ANY RELATED ATTACHMENTS TO A SIGNAL FACE LOCATED OVER ANY PORTION OF A HIGHWAY SHALL BE ACCORDING TO CURRENT STATE STANDARD 880001 WITH A MINIMUM OF 17 FT (5.18 m) FROM THE HIGHEST POINT OF PAVEMENT.
5. THE TOP OF THE SIGNAL HOUSING OF A SIGNAL FACE LOCATED OVER ANY PORTION OF A HIGHWAY SHALL NOT BE MORE THAN 25.6 FT (7.8 m) ABOVE THE PAVEMENT.

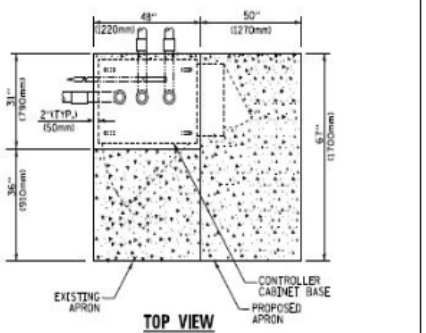
TRAFFIC SIGNAL EQUIPMENT OFFSET

TRAFFIC SIGNAL EQUIPMENT	COMBINATION CONCRETE CURB AND GUTTER (MINIMUM DISTANCE FROM BACK OF CURB TO CENTERLINE OF FOUNDATION)	SHOULDER/NON-CURBED AREA (MINIMUM DISTANCE FROM EDGE OF PAVEMENT TO CENTERLINE OF FOUNDATION)
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 POST	4 FT (1.2m)	SHOULDER WIDTH + 2 FT (0.6m), MINIMUM 10 FT (3.0m)
TEMPORARY WOOD POLE	6 FT (1.8m)	SHOULDER WIDTH + 2 FT (0.6m), MINIMUM 10 FT (3.0m)
CONTROLLER CABINET	6 FT (1.8m) MINIMUM DISTANCE SEE NOTE 2	SHOULDER WIDTH + 6 FT (1.8m), MINIMUM 16 FT (4.9m) SEE NOTE 3.
SERVICE INSTALLATION, GROUND MOUNT	6 FT (1.8m) MINIMUM DISTANCE SEE NOTE 2	SHOULDER WIDTH + 6 FT (1.8m), MINIMUM 16 FT (4.9m) SEE NOTE 3.

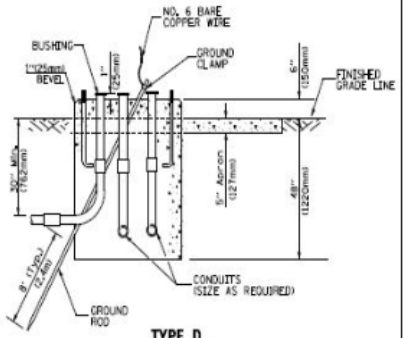
NOTES:

1. CONTACT THE "AREA TRAFFIC SIGNAL MAINTENANCE AND OPERATIONS ENGINEER" FOR ASSISTANCE IN LOCATING THE TRAFFIC SIGNAL EQUIPMENT WHEN THERE ARE CONFLICTS WITH DITCHES OR THE MINIMUM OFFSET DISTANCES CANNOT BE MET.
2. MINIMUM DISTANCE FROM THE BACK OF CURB TO THE ROADWAY SIDE OF THE FOUNDATION.
3. MINIMUM DISTANCE FROM THE EDGE OF PAVEMENT TOTHE ROADWAY SIDE OF THE FOUNDATION.
4. ANY CHANGES TO THE OFFSETS OF THE FOUNDATIONS, FROM THE MINIMUM DISTANCES LISTED IN THE "TRAFFIC SIGNAL EQUIPMENT OFFSET" CHART AND THE TRAFFIC SIGNAL INSTALLATION PLAN, COULD EFFECT THE PLACEMENT OF THE SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS AND THE PEDESTRIAN PUSHBUTTONS. THE SIGNAL HEAD PLACEMENT ON THE MAST ARMS SHALL REMAIN AS PER THE TRAFFIC SIGNAL INSTALLATION PLAN AND THE "TRAFFIC SIGNAL MAST ARM AND SIGNAL POST" DETAIL ABOVE. THE PROPOSED MAST ARM LENGTHS MAY NEED TO BE REVISED TO MEET THE ABOVE REQUIREMENTS. THE PEDESTRIAN SIGNAL HEADS AND PEDESTRIAN PUSHBUTTONS MUST MEET THE REQUIREMENTS UNDER THE DETAILS ON THIS SHEET.

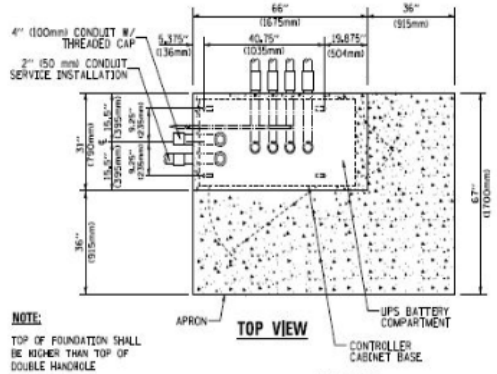
FILE NAME =	USER NAME = fosterj	DESIGNED - DAD	REVISED - DAD 1-6-14	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DISTRICT ONE STANDARD TRAFFIC SIGNAL DESIGN DETAILS		F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	PLOT SCALE = 50.0000 ' / in.	DRAWN - BCK	REVISED -								
	PLOT DATE = 1/15/2014	CHECKED - DAD	REVISED -					TS-05	CONTRACT NO.		
		DATE - 10-29-09	REVISED -		SCALE: NONE	SHEET NO. 3 OF 7 SHEETS STA. TO STA.		FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT	



TOP VIEW

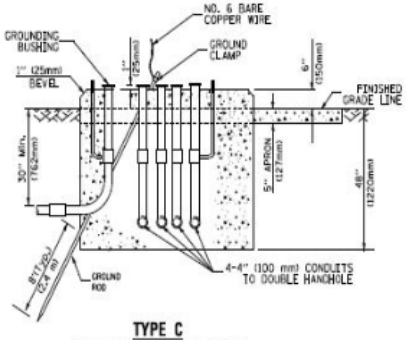


TYPE D
FOR GROUND MOUNTED
CONTROLLER CABINET
AND UPS BATTERY CABINET

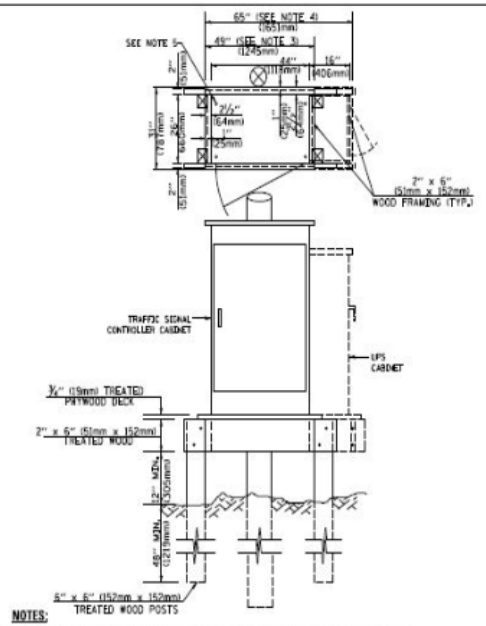


NOTE:
TOP OF FOUNDATION SHALL BE HIGHER THAN TOP OF DOUBLE HANDHOLE

TOP VIEW



TYPE C
FOR GROUND MOUNTED
SUPER P (TYPE IV) AND SUPER R (TYPE V)
CONTROLLER CABINETS



NOTES:
1. BASED ON CONTROLLER CABINET TYPE IV WITH BASE DIMENSIONS OF 26" x 44" (660mm x 1118mm. ADJUST PLATFORM SIZE TO FIT CABINET BASE DIMENSIONS BEING SUPPLIED
2. BASED ON UNINTERRUPTIBLE POWER SUPPLY CABINET WITH BASE DIMENSIONS OF 16" x 25" (406mm x 635mm. ADJUST PLATFORM SIZE TO FIT CABINET BASE DIMENSIONS BEING SUPPLIED.
3. PLATFORM SIZE FOR CONTROLLER CABINET TYPE IV.
4. PLATFORM SIZE FOR CONTROLLER CABINET TYPE IV AND UNINTERRUPTIBLE POWER SUPPLY CABINET.
5. DRILLED HOLES THROUGH THE PLATFORM BASE TO MATCH THE CONTROLLER CABINET BOLT TEMPLATE. FASTEN THE CONTROLLER CABINET TO THE PLATFORM WITH CARRIAGE BOLTS, WASHERS AND NUTS.
6. FASTEN ALL SUPPORT WOOD FRAMING TO THE WOOD POSTS WITH 2 LAG SCREWS FOR EACH CONNECTION.

TEMPORARY SIGNAL CONTROLLER
WOOD SUPPORT PLATFORM

CABLE SLACK LENGTH	FEET	METER
HANDHOLE	6.5	2.0
DOUBLE HANDHOLE	13.0	4.0
SIGNAL POST	2.0	0.6
MAST ARM	2.0	0.6
CONTROLLER CABINET	1.5	0.5
FIBER OPTIC AT CABINET	13.0	4.0
ELECTRIC SERVICE AT (CABINET OR SERVICE LOCATION)	1.5	0.5
GROUND CABLE (SIGNAL POST, MAST ARM, CABINET)	1.5	0.5
GROUND CABLE (BETWEEN FRAME AND COVER)	5.0	1.6

CABLE SLACK

VERTICAL CABLE LENGTH	FEET	METER
MAST ARM POLE : MAST ARM MOUNTED SIGNAL HEAD) (L = MAST ARM LENGTH - DISTANCE TO SIGNAL HEAD FROM END OF ARM)	20.0+L	6.0+L
BRACKET MOUNTED (MAST ARM POLE OR SIGNAL POLE)	13.0	4.0
PEDESTRIAN PUSH BUTTON	6.0	2.0
SERVICE INSTALLATION POLE MOUNT TO SERVICE DROP	13.5	4.1
SERVICE INSTALLATION POLE MOUNT TO GROUND	13.5	4.1
SERVICE INSTALLATION GROUND MOUNT	6.0	2.0
FOUNDATION (SIGNAL POST, MAST ARM POLE, CONTROLLER CABINET, SERVICE-GROUND MOUNT)	3.0	1.0

VERTICAL CABLE LENGTH

FOUNDATION	DEPTH
TYPE A - Signal Post	4'-0" (1.2m)
TYPE C - CONTROLLER W/ UPS	4'-0" (1.2m)
TYPE D - CONTROLLER	4'-0" (1.2m)
SERVICE INSTALLATION, GROUND MOUNT, TYPE A - SQUARE	4'-0" (1.2m)

DEPTH OF FOUNDATION

Mast Arm Length	① Foundation Depth	Foundation Diameter	Spiral Diameter	Quantity of Rebars	Size of Rebars
Less than 30' (9.1 m)	10'-0" (3.0 m)	30" (750mm)	24" (600mm)	8	6(19)
Greater than or equal to 30' (9.1 m) and less than 40' (12.2 m)	13'-6" (4.1 m)	30" (750mm)	24" (600mm)	8	6(19)
	11'-0" (3.4 m)	36" (900mm)	30" (750mm)	12	7(22)
Greater than or equal to 40' (12.2 m) and less than 50' (15.2 m)	13'-0" (4.0 m)	36" (900mm)	30" (750mm)	12	7(22)
Greater than or equal to 50' (15.2 m) and up to 55' (16.8 m)	15'-0" (4.6 m)	36" (900mm)	30" (750mm)	12	7(22)
Greater than or equal to 55' (16.8 m) and less than 65' (19.8 m)	21'-0" (6.4 m)	42" (1060mm)	36" (900mm)	16	8(25)
Greater than or equal to 65' (19.8 m) and up to 75' (22.8 m)	25'-0" (7.6 m)	42" (1060mm)	36" (900mm)	16	8(25)

NOTES:
1. These foundation depths are for sites which have cohesive soils (clayey silt, sandy clay, etc.) along the length of the shafts, with an average Unconfined Compressive Strength (Qu) > 1.0 tsf (100 kpa). 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.
2. Combination mast arm assemblies under 55 feet (16.8 m) shall use 36" (900 mm) diameter foundations.
3. Combination mast arm assemblies under 55 feet (16.8 m) through 75 feet (22.8 m) shall use 42" (1060 mm) diameter foundations
4. For mast arm assemblies with dual arms refer to state standard 878001.

DEPTH OF MAST ARM FOUNDATIONS, TYPE E

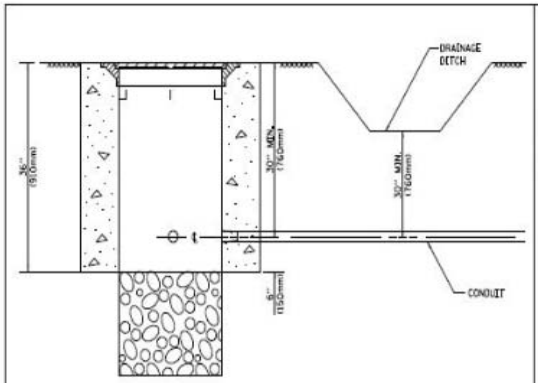
FILE NAME :	USER NAME :	DESIGNED - DAD	REVISED - DAD 1-1-14
		DRAWN - BDK	REVISED -
	PLOT SCALE = 50.0000 ' / in.	CHECKED - DAD	REVISED -
	PLOT DATE = 1/13/2014	DATE - 10-29-09	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALE: NONE	SHEET NO. 5 OF 7 SHEETS	STA.	TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	TS-85	CONTRACT NO.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

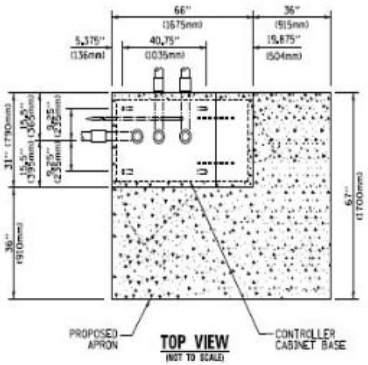


NOTES:

1. CONDUIT DEPTH SHALL BE A MINIMUM OF 30" (760mm) BELOW THE BOTTOM OF THE DRAINAGE DITCH OR ANY SLOPING GROUND.
2. THE MINIMUM CONDUIT DEPTH APPLIES TO ALL CONDUIT PLACED UNDER ROADWAY PAVEMENT, MULTI-USE PATHS, SIDEWALKS AND SOIL SURFACES.
3. THE MINIMUM CONDUIT DEPTH APPLIES TO ALL HANDHOLES, HEAVY DUTY HANDHOLES AND DOUBLE HANDHOLES.

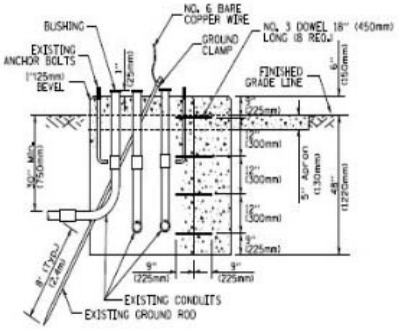
HANDHOLE WITH MINIMUM CONDUIT DEPTH

(NOT TO SCALE)



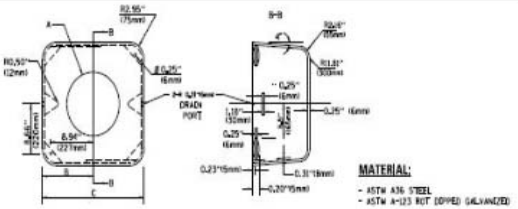
TOP VIEW

(NOT TO SCALE)



MODIFY EXISTING TYPE "D" FOUNDATION TO TYPE "C" FOUNDATION

(NOT TO SCALE)



A	B	C	HEIGHT	WEIGHT
VARIES	9.5" (241mm)	19" (483mm)	7" (178mm) - 12" (300mm)	53 lbs (24kg)
VARIES	10.75" (273mm)	21.5" (546mm)	7" (178mm) - 12" (300mm)	68 lbs (31 kg)
VARIES	13.3" (339mm)	26" (660mm)	7" (178mm) - 12" (300mm)	81 lbs (37 kg)
VARIES	18.5" (470mm)	37" (940mm)	7" (178mm) - 12" (300mm)	126 lbs (57 kg)

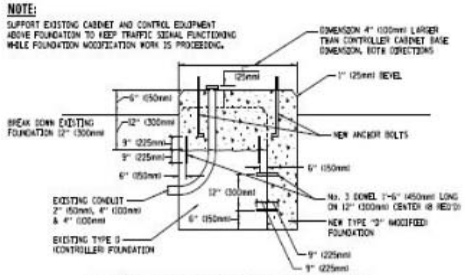
SHROUD

NOTES:

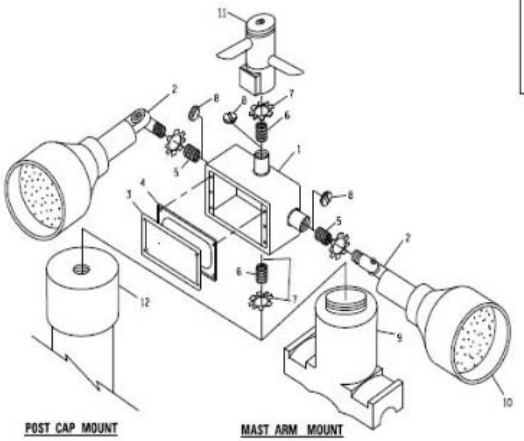
1. DIMENSION "A" IS EQUAL TO THE DIAMETER OF THE MAST ARM POLE AT THE TOP OF THE SHROUD. THE SHROUD SHALL BE TIGHT TO THE MAST ARM POLE.
2. THE SUPPLIER SHALL VERIFIED THE ABOVE DIMENSIONS BASED ON MAST ARM REQUIREMENTS.
3. THE HEIGHT OF THE SHROUD SHALL COVER THE ANCHOR BOLTS, NUTS AND MAST ARM POLE BASE.

NOTE:

SUPPORT EXISTING CABINET AND CONTROL EQUIPMENT ABOVE FOUNDATION TO KEEP TRAFFIC SIGNAL FUNCTIONING WHILE FOUNDATION MODIFICATION WORK IS PROCEEDING.



MODIFY EXISTING TYPE "D" FOUNDATION

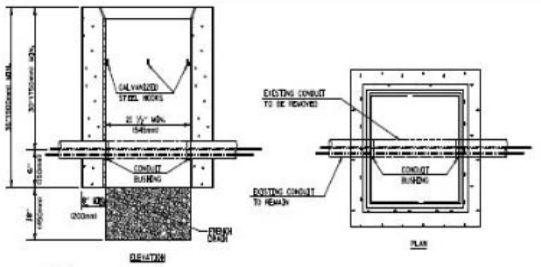


ITEM NO.	IDENTIFICATION
1	OUTLET BOX- GALV. 21 CU.IN. (0.000344 CU.M)
2	LAMP HOLDER AND COVER
3	OUTLET BOX COVER
4	RUBBER COVER GASKET
5	REDUCING BUSHING
6	¾" (19 mm) CLOSE NIPPLE
7	¾" (19 mm) LOCKNUT
8	¾" (19 mm) HOLE PLUG
9	SADDLE BRACKET - GALV.
10	6 WATT FAR 30 LED FLOOD LAMP
11	DETECTOR UNIT
12	POST CAP (18 FT. (5.4 m) POST MIN.)

NOTES:

1. ALL ELECTRICAL ITEMS, EXCEPT ITEMS #2 AND #11 SHALL BE ALUMINUM OR GALVANIZED.
2. ITEM #1- OZ/GEDNEY FSX-1-50 OR EQUIVALENT
   ITEM #3- MILLBERRY CON-O-SHADE LAMP SHIELD OR EQUIVALENT
   ITEM #9- "BAND-IT" SADDLE BRACKET OR EQUIVALENT
3. WHEN POST MOUNTING IS SPECIFIED, ITEM #9 SHALL NOT BE REQUIRED. THE DETECTION UNIT SHALL BE MOUNTED DIRECTLY ON TOP OF THE CAP BY DRILLING AND TAPPING A ¾" (19 mm) HOLE WITH PIPE THREADS. THE POST CAP SHALL EITHER BE SCREWED TO THE TOP OF THE POST OR A MINIMUM OF 3 TIGHTENING SCREWS SHALL BE REQUIRED ON EACH CAP.

EMERGENCY VEHICLE DETECTOR WITH CONFIRMATION BEACON MOUNTING DETAIL



NOTES:

1. HANDHOLE CONSTRUCTED PER STATE STANDARD 814001.
2. REMOVAL OF THE EXISTING CONDUIT FROM THE HANDHOLE AND THE INSTALLATION OF THE CONDUIT BUSHINGS SHALL BE INCLUDED WITH THE COST OF THE HANDHOLE.

HANDHOLE TO INTERCEPT EXISTING CONDUIT

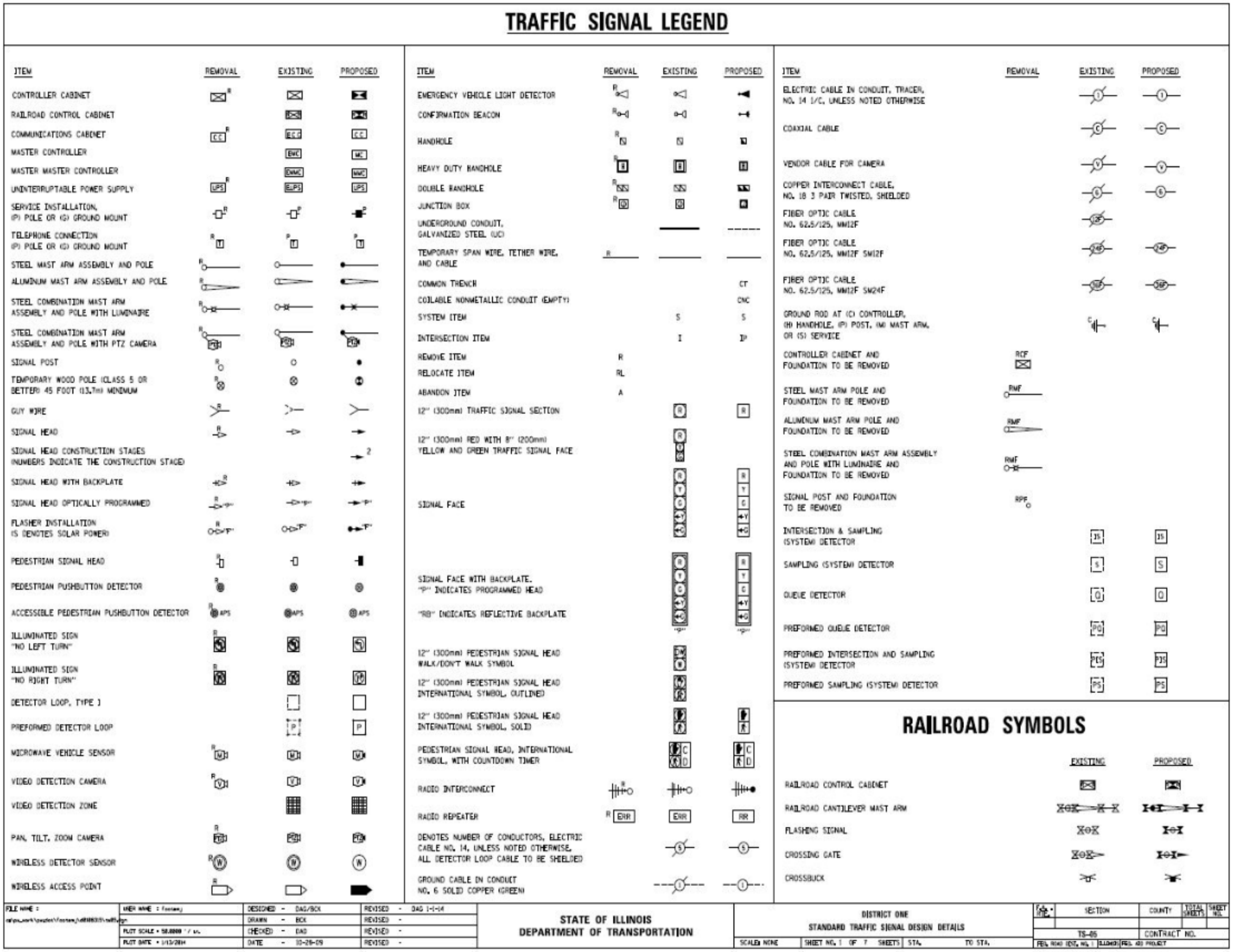
FILE NAME =	USER NAME = (username)	DESIGNED - DAD	REVISED - DAC 1-1-14
		DRAWN - BCK	REVISED -
	PLOT SCALE = 50.0000 ' / in.	CHECKED - DAD	REVISED -
	PLOT DATE = 1/13/2014	DATE - 10-26-09	REVISED -

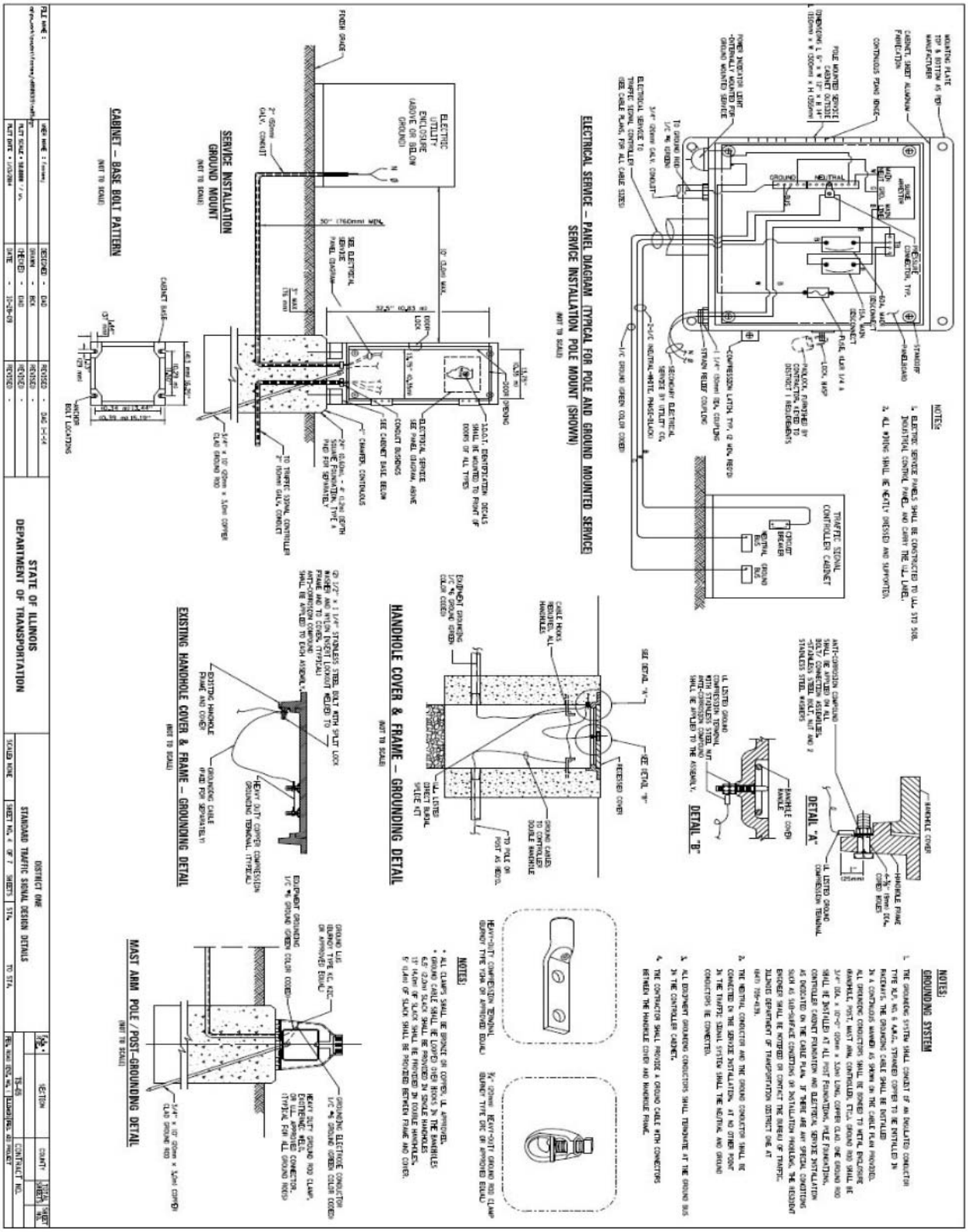
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DISTRICT ONE
STANDARD TRAFFIC SIGNAL DESIGN DETAILS

SCALED NONE | SHEET NO. 6 OF 7 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	TS-05			
FED. ROAD DIST. NO. 1	ILLINOIS	FED. AID PROJECT	CONTRACT NO.	


TRAFFIC SIGNAL LEGEND
ITEM
REMOVAL
EXISTING
PROPOSED
CONTROLLER CABINET
RAILROAD CONTROL CABINET
COMMUNICATIONS CABINET
MASTER CONTROLLER
MASTER MASTER CONTROLLER
UNINTERRUPTABLE POWER SUPPLY
SERVICE INSTALLATION, (P) POLE OR (G) GROUND MOUNT
TELEPHONE CONNECTION (P) POLE OR (G) GROUND MOUNT
STEEL MAST ARM ASSEMBLY AND POLE
ALUMINUM MAST ARM ASSEMBLY AND POLE
STEEL COMBINATION MAST ARM ASSEMBLY AND POLE WITH LUMINAIRE
STEEL COMBINATION MAST ARM ASSEMBLY AND POLE WITH PTZ CAMERA
SIGNAL POST
TEMPORARY WOOD POLE (CLASS 5 OR BETTER) 45 FOOT (13.7m) MINIMUM
GUY WIRE
SIGNAL HEAD
SIGNAL HEAD CONSTRUCTION STAGES (NUMBERS INDICATE THE CONSTRUCTION STAGE)
SIGNAL HEAD WITH BACKPLATE
SIGNAL HEAD OPTICALLY PROGRAMMED
FLASHER INSTALLATION (S DENOTES SOLAR POWER)
PEDESTRIAN SIGNAL HEAD
PEDESTRIAN PUSHBUTTON DETECTOR
ACCESSIBLE PEDESTRIAN PUSHBUTTON DETECTOR
ILLUMINATED SIGN "NO LEFT TURN"
ILLUMINATED SIGN "NO RIGHT TURN"
DETECTOR LOOP, TYPE I
PREFORMED DETECTOR LOOP
MICROWAVE VEHICLE SENSOR
VIDEO DETECTION CAMERA
VIDEO DETECTION ZONE
PAN, TILT, ZOOM CAMERA
WIRELESS DETECTOR SENSOR
WIRELESS ACCESS POINT
EMERGENCY VEHICLE LIGHT DETECTOR
CONFIRMATION BEACON
HANDHOLE
HEAVY DUTY HANDHOLE
DOUBLE HANDHOLE
JUNCTION BOX
UNDERGROUND CONDUIT, GALVANIZED STEEL (UC)
TEMPORARY SPAN WIRE, TETHER WIRE, AND CABLE
COMMON TRENCH
COILABLE NONMETALLIC CONDUIT (EMPTY)
SYSTEM ITEM
INTERSECTION ITEM
REMOVE ITEM
RELOCATE ITEM
ABANDON ITEM
12" (300mm) TRAFFIC SIGNAL SECTION
12" (300mm) RED WITH 8" (200mm) YELLOW AND GREEN TRAFFIC SIGNAL FACE
SIGNAL FACE
SIGNAL FACE WITH BACKPLATE. "P" INDICATES PROGRAMMED HEAD
"RB" INDICATES REFLECTIVE BACKPLATE
12" (300mm) PEDESTRIAN SIGNAL HEAD WALK/DON'T WALK SYMBOL
12" (300mm) PEDESTRIAN SIGNAL HEAD INTERNATIONAL SYMBOL, OUTLINED
12" (300mm) PEDESTRIAN SIGNAL HEAD INTERNATIONAL SYMBOL, SOLID
PEDESTRIAN SIGNAL HEAD, INTERNATIONAL SYMBOL, WITH COUNTDOWN TIMER
RADIO INTERCONNECT
RADIO REPEATER
DENOTES NUMBER OF CONDUCTORS, ELECTRIC CABLE NO. 14, UNLESS NOTED OTHERWISE. ALL DETECTOR LOOP CABLE TO BE SHIELDED
GROUND CABLE IN CONDUIT NO. 6 SOLID COPPER (GREEN)
ELECTRIC CABLE IN CONDUIT, TRACER, NO. 14 1/C, UNLESS NOTED OTHERWISE
COAXIAL CABLE
VENDOR CABLE FOR CAMERA
COPPER INTERCONNECT CABLE, NO. 18 3 PAIR TWISTED, SHIELDED
FIBER OPTIC CABLE NO. 62.5/125, MM12F
FIBER OPTIC CABLE NO. 62.5/125, MM12F SM12F
FIBER OPTIC CABLE NO. 62.5/125, MM12F SM24F
GROUND ROD AT (C) CONTROLLER, (H) HANDHOLE, (P) POST, (M) MAST ARM, OR (S) SERVICE
CONTROLLER CABINET AND FOUNDATION TO BE REMOVED
STEEL MAST ARM POLE AND FOUNDATION TO BE REMOVED
ALUMINUM MAST ARM POLE AND FOUNDATION TO BE REMOVED
STEEL COMBINATION MAST ARM ASSEMBLY AND POLE WITH LUMINAIRE AND FOUNDATION TO BE REMOVED
SIGNAL POST AND FOUNDATION TO BE REMOVED
INTERSECTION & SAMPLING (SYSTEM) DETECTOR
SAMPLING (SYSTEM) DETECTOR
QUEUE DETECTOR
PREFORMED QUEUE DETECTOR
PREFORMED INTERSECTION AND SAMPLING (SYSTEM) DETECTOR
PREFORMED SAMPLING (SYSTEM) DETECTOR
RAILROAD SYMBOLS
EXISTING
PROPOSED
RAILROAD CONTROL CABINET
RAILROAD CANTILEVER MAST ARM
FLASHING SIGNAL
CROSSING GATE
CROSSBUCK
FILE NAME :
USER NAME :
PLOT SCALE :
PLOT DATE :
DESIGNED - DAG/BCK
DRAWN - BCK
CHECKED - DAD
DATE - 10-28-09
REVISED - DAG 1-1-14
REVISED -
REVISED -
REVISED -
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DISTRICT ONE
STANDARD TRAFFIC SIGNAL DESIGN DETAILS
SCALE: NONE
SHEET NO. 1 OF 7 SHEETS
STA.
TO STA.
SECTION
COUNTY
TOTAL SHEETS
SHEET NO.
TS-05
CONTRACT NO.
FED. ROAD DIST. NO. 1
ILLINOIS
FED. AID PROJECT


NOTES:
GROUNDING SYSTEM
ELECTRICAL SERVICE – PANEL DIAGRAM (TYPICAL FOR POLE AND GROUND MOUNTED SERVICE)
SERVICE INSTALLATION POLE MOUNT (SHOWN)
SERVICE INSTALLATION GROUND MOUNT
CABINET – BASE BOLT PATTERN
HANDHOLE COVER & FRAME – GROUNDING DETAIL
EXISTING HANDHOLE COVER & FRAME – GROUNDING DETAIL
MAST ARM POLE / POST–GROUNDING DETAIL
DETAIL "A"
DETAIL "B"
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
STANDARD TRAFFIC SIGNAL DESIGN DETAILS
DISTRICT ONE

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

TRAFFIC SIGNAL SPECIFICATIONS
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STANDARD TRAFFIC SIGNAL DESIGN DETAILS
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SECTION 3 – LIST OF LOCATIONS

LIGHTING SYSTEM – EMC MAINTAINED LOCATIONS AT TIME OF CONTRACT DEVELOPMENT

Sys.	Type	Loc. #	Main Route	Cross Street	Co.	Qty
L	EXP	0103-A	I 55 Stev	Martin Luther King Dr	CO	1
L	EXP	0105-B	I 55 Stev	Michigan Ave	CO	2
L	EXP	0110-C	I 55 Stev	Wentworth Ave	CO	3
L	EXP	0115-D	I 55 Stev	Stewart Ave	CO	4
L	EXP	0120-E	I 55 Stev	Loomis St	CO	5
L	EXP	0123-E1	I 55 Stev Incl Nav Ltg	Ashland Ave	CO	6
L	EXP	0125-F	I 55 Stev	Damen Ave	CO	7
L	EXP	0130-G	I 55 Stev	California Ave	CO	8
L	EXP	0133-G1	I 55 Stev	Kedzie Ave	CO	9
L	EXP	0135-H	I 55 Stev	Pulaski Rd	CO	10
L	EXP	0137-H1	I 55 Stev	Pulaski Rd Tunnel	CO	11
L	EXP	0140-I	I 55 Stev	IL 50 Cicero Ave	CO	12
L	EXP	0150-X	I 55 Stev	Central Ave North	CO	13
L	EXP	0155-J	I 55 Stev	Central Ave	CO	14
L	EXP	0160-K	I 55 Stev	64th St 6400 W	CO	15
L	EXP	0165-L	I 55 Stev	IL 43 Harlem Ave	CO	16
L	EXP	0170-Y	I 55 Stev	IL 43 Harlem Ave	CO	17
L	EXP	0173-M	I 55 Stev Incl Nav Ltg	IL 171 1st Ave	CO	18
L	EXP	0175-N	I 55 Stev Incl Nav Ltg	IL 171 1st Ave	CO	19
L	EXP	0180-O	I 55 Stev	85th Ave 8500W	CO	20
L	EXP	0184-P	I 55 Stev	91st Ave 9100W	CO	21
L	EXP	0187-R	I 55 Stev	US 12 20 45 LaGrange Rd	CO	22
L	EXP	0188-R1	I 55 Stev	US12 20 45 SB Ramp	CO	23
L	EXP	0190-S	I 55 Stev	Wolf Rd	CO	24
L	EXP	0193-S1	I 55 Stev	W of I 294 Tollway	CO	25
L	EXP	0403-A	I 57	Yale Ave	CO	26
L	EXP	0405-B	I 57	Racine Ave	CO	27
L	EXP	0410-C	I 57	107th Pl	CO	28
L	EXP	0415-D	I 57	112th St	CO	29
L	EXP	0420-E	I 57	120th St	CO	30
L	EXP	0425-F	I 57	127th St	CO	31

L	EXP	0430-G	I 57	Vermont St	CO	32
L	EXP	0435-H	I 57	IHB RR	CO	33
L	EXP	0440-I	I 57	Spaulding Ave	CO	34
L	EXP	0455-L	I 57	US 6 159th St	CO	35
L	EXP	0460-P	I 57	159TH Crawford Ave West	CO	36
L	EXP	0465-M	I 57	163rd St Barry Ln	CO	37
L	EXP	0470-N	I 57	W 167th St	CO	38
L	EXP	0475-O	I 57	E 167th St	CO	39
L	EXP	0480-T	I 57	175th St	CO	40
L	EXP	0485-U	I 57	I 80	CO	41
L	EXP	0489-V	I 57	Flossmoor Rd	CO	42
L	EXP	0492-W	I 57	Vollmer Rd	CO	43
L	EXP	0495-X	I 57	US 30 Lincoln Hwy	CO	44
L	EXP	0497-Y	I 57	Sauk Trail Rd	CO	45
L	EXP	0499-Z	I 57	Steger Rd	CO	46
L	EXP	0603-A	I 80 94	Burnham Ave	CO	47
L	EXP	0605-B	I 80 94	Torrence Ave	CO	48
L	EXP	0610-E	I 80	169th St	CO	49
L	EXP	0615-F	I 80	Crawford Ave	CO	50
L	EXP	0618-F1	I 80	175th St	CO	51
L	EXP	0620-G	I 80	Central Ave	CO	52
L	EXP	0625-H	I 80	Ridgeland Ave	CO	53
L	EXP	0815-D	I 190	Des Plaines River Rd	CO	54
L	EXP	0820-D1	I 90 JFK	East River Rd	CO	55
L	EXP	0830-F	I 90 JFK	Oriole Ave	CO	56
L	EXP	0835-G	I 90 JFK	Sayer Ave	CO	57
L	EXP	0840-H	I 90 JFK	Moody Ave	CO	58
L	EXP	0845-I	I 90 JFK	Edmunds St	CO	59
L	EXP	0847-J	I 90 JFK	Lawrence Ave	CO	60
L	EXP	0850-K	I 90 94 JFK	Kedvale Ave	CO	61
L	EXP	0853-L	I 90 94 JFK	Kimball Ave	CO	62
L	EXP	0855-M	I 90 94 JFK	California Ave	CO	63
L	EXP	0857-N	I 90 94 JFK	Leavitt St	CO	64
L	EXP	0860-O	I 90 94 JFK	Cortland St	CO	65
L	EXP	0863-P	I 90 94 JFK	Blackhawk St	CO	66
L	EXP	0865-R	I 90 94 JFK	Augusta Blvd	CO	67
L	EXP	0870-S1	I 90 94 JFK	Ontario St Ohio St	CO	68
L	EXP	0875-W	I 90 94 JFK	Hubbard St	CO	69
L	EXP	0883-T	I 90 94 JFK	Hubbard St Cave	CO	70
L	EXP	0886-U	I 90 94 JFK	W Washington Blvd	CO	71
L	EXP	0888-V	I 90 94 JFK	E Washington Blvd	CO	72
L	EXP	0903-N	I 94 Ryan	99th St	CO	73

L	EXP	0905-O	I 94 Ryan	91st St	CO	74
L	EXP	0910-P	I 94 Ryan	81st St	CO	75
L	EXP	0915-R	I 94 Ryan	73rd St	CO	76
L	EXP	0917-R1	I 90 94 Ryan	67th St	CO	77
L	EXP	0920-S	I 90 94 Ryan	63rd St	CO	78
L	EXP	0925-T	I 90 94 Ryan	57th St	CO	79
L	EXP	0927-T1	I 90 94 Ryan	55th St	CO	80
L	EXP	0930-U	I 90 94 Ryan	48th St	CO	81
L	EXP	0935-V	I 90 94 Ryan	Root St	CO	82
L	EXP	0940-W	I 90 94 Ryan	35th St	CO	83
L	EXP	0945-X	I 90 94 Ryan	27th St	CO	84
L	EXP	0950-Y	I 90 94 Ryan	Normal Ave	CO	85
L	EXP	0955-Z	I 90 94 Ryan	Wallace St	CO	86
L	EXP	0960-A	I 90 94 Ryan	21st Pl Incl Nav Ltg	CO	87
L	EXP	0965-B	I 90 94 Ryan	17th St	CO	88
L	EXP	0970-C	I 90 94 Ryan	Maxwell St	CO	89
L	EXP	0975-D	I 90 94 Ryan	Polk St	CO	90
L	EXP	1004-N	IL 394 Ford	US 30 Lincoln Hwy	CO	91
L	EXP	1005-B	IL 394 Ford	Glenwood Dyer Rd	CO	92
L	EXP	1008-D1	IL 394 Ford	Thornton Lansing Rd	CO	93
L	EXP	1010-C	I 94 Ford	N of I 80	CO	94
L	EXP	1015-D	I 94 Ford	S of I 80	CO	95
L	EXP	1017-E1	I 94 Ford	170th St	CO	96
L	EXP	1020-E	I 94 Ford	166th St	CO	97
L	EXP	1025-F	I 94 Ford	159th St	CO	98
L	EXP	1030-G	I 94 Ford	Michigan City Rd	CO	99
L	EXP	1032-G1	I 94 Ford	147th St	CO	100
L	EXP	1035-H	I 94 Ford	Dolton Ave	CO	101
L	EXP	1040-X	I 94 Ford	137th St	CO	102
L	EXP	1046-V	I 94 Ford	E 130th St	CO	103
L	EXP	1047-W	I 94 Ford	W 130th St	CO	104
L	EXP	1050-J	I 94 Ford	119th St	CO	105
L	EXP	1055-K	I 94 Ford	111th St	CO	106
L	EXP	1060-Y	I 94 Ford	115th St	CO	107
L	EXP	1065-L	I 94 Ford	103rd St	CO	108
L	EXP	1070-M	I 94 Ford	100th St	CO	109
L	EXP	1203-A	I 94 Edens	Knox Ave	CO	110
L	EXP	1205-B	I 94 Edens	Foster Ave	CO	111
L	EXP	1210-C	I 94 Edens	US 14 Caldwell Peterson	CO	112
L	EXP	1215-D	I 94 Edens	Pratt Ave	CO	113
L	EXP	1220-E	I 94 Edens	Touhy Ave	CO	114
L	EXP	1225-F	I 94 Edens	Niles Center Rd	CO	115

L	EXP	1230-G	I 94 Edens	Oakton Rd	CO	116
L	EXP	1235-H	I 94 Edens	IL 58 Dempster St	CO	117
L	EXP	1240-J	I 94 Edens	Golf Rd	CO	118
L	EXP	1245-K	I 94 Edens	Glenview Rd	CO	119
L	EXP	1250-L	I 94 Edens	Lake Ave	CO	120
L	EXP	1255-M	I 94 Edens	Winnetka Rd	CO	121
L	EXP	1265-O	I 94 Edens	Tower Rd	CO	122
L	EXP	1270-P	I 94 Edens	S of IL 68 Dundee Rd	CO	123
L	EXP	1275-R	I 94 Edens	IL 68 Dundee Rd	CO	124
L	EXP	1280-S	I 94 Edens	Lake Cook Rd	CO	125
L	EXP	1303-A	I 290 IKE	Wacker Dr	CO	126
L	EXP	1315-D	I 290 IKE	Lower Wacker Dr Exit Ramp	CO	127
L	EXP	1320-E	I 290 IKE	Lower Wacker Dr Ent Ramp	CO	128
L	EXP	1325-F	I 290 IKE	Canal St	CO	129
L	EXP	1330-G	I 290 IKE	Racine Ave	CO	130
L	EXP	1335-H	I 290 IKE	Leavitt St	CO	131
L	EXP	1340-I	I 290 IKE	Kedzie Ave	CO	132
L	EXP	1345-J	I 290 IKE	Pulaski Ave Crawford Ave	CO	133
L	EXP	1350-K	I 290 IKE	IL 50 Cicero Ave	CO	134
L	EXP	1355-L	I 290 IKE	Central Ave	CO	135
L	EXP	1360-M	I 290 IKE	Oak Park Ave	CO	136
L	EXP	1362-M1	I 290 IKE	IL 43 Harlem	CO	137
L	EXP	1365-N	I 290 IKE	Des Plaines Ave	CO	138
L	EXP	1370-O	I 290 IKE	IL 171 1st Ave	CO	139
L	EXP	1375-P	I 290 IKE	17th Ave	CO	140
L	EXP	1380-R	I 290 IKE	25th Ave	CO	141
L	EXP	1385-S	I 290 IKE	Westchester Blvd	CO	142
L	EXP	1386-W	I 290 IKE	US 12 20 45 Mannheim	CO	143
L	EXP	1387-X	I 290 IKE	Wolf Rd Exit Ramp	CO	144
L	EXP	1388-Y	I 290 IKE	Orchard Ave	CO	145
L	EXP	1390-T	I 290 IKE	Laverne Ave Wolf Rd	CO	146
L	EXP	1391-Z	I 290 IKE	W of I 88 Split	CO	147
L	EXP	1393-U	I 290 IKE	Roosevelt Rd Exit Ramp	CO	148
L	EXP	1397-V	I 290 IKE	Arthur Ave	CO	149
L	EXP	1504-S	I 290 IL 53	Biesterfield Rd	CO	150
L	EXP	1505-M	I 290 IL 53	Schaumburg Rd	CO	151
L	EXP	1510-N	I 290 IL 53	S of IL 72 Higgins Rd	CO	152
L	EXP	1515-O	I 290 IL 53	IL 72 Higgins Rd	CO	153
L	EXP	1520-P	I 290 IL 53	IL 58 Golf Rd	CO	154

L	EXP	1525-R	I 290 IL 53	IL 62 Algonquin Rd	CO	155
L	EXP	1535-U	I 290 IL 53	Euclid St	CO	156
L	EXP	1540-V	I 290 IL 53	US 14 Northwest Highway	CO	157
L	EXP	1545-W	I 290 IL 53	Palatine Rd	CO	158
L	EXP	1550-X	I 290 IL 53	US 12 Rand Rd	CO	159
L	EXP	1580-Y	I 290 IL 53	IL 68 Dundee Rd	CO	160
L	EXP	1590-Z	I 290 IL 53	Lake Cook Rd	CO	161
L	EXP	0203-A	I 55 Stev	Madison St	DU	162
L	EXP	0205-B	I 55 Stev	S IL 83 Kingery Hwy	DU	163
L	EXP	0210-C	I 55 Stev	N IL 83 Kingery Hwy	DU	164
L	EXP	0215-D	I 55 Stev	Cass Ave	DU	165
L	EXP	0220-E	I 55 Stev	Kearney Rd	DU	166
L	EXP	0225-F	I 55 Stev	Lemont Rd	DU	167
L	EXP	0230-G	I 55 Stev	Woodward Ave	DU	168
L	EXP	1405-W	I 290	St Charles Rd	DU	169
L	EXP	1410-X	I 290	IL 64 North Ave	DU	170
L	EXP	1415-Y	I 290	York Rd	DU	171
L	EXP	1420-A	I 290	Grand Ave	DU	172
L	EXP	1425-B	I 290	Villa Ave	DU	173
L	EXP	1430-C	I 290	N IL 83 Elmhurst Rd	DU	174
L	EXP	1435-D	I 290	S IL 83 Elmhurst Rd	DU	175
L	EXP	1440-E	I 290	Addison Rd	DU	176
L	EXP	1445-F	I 290	Mill Rd	DU	177
L	EXP	1450-G	I 290	Itasca Rd	DU	178
L	EXP	1455-H	I 290	I 290 IKE I 355 & Central	DU	179
L	EXP	1458-I	I 290	US 20 Lake St	DU	180
L	EXP	1460-J	I 290	IL19 Irving Park Rd	DU	181
L	EXP	1495-T	I 290 I-355	Army Trail Rd	DU	182
L	EXP	1103-T	I 94 Edens US 41	Clavey Rd	LA	183
L	EXP	0305-H	I 55 Stev	Joliet Rd	WI	184
L	EXP	0307-H1	I 55 Stev	International Dr	WI	185
L	EXP	0310-I	I 55 Stev	IL 53	WI	186
L	EXP	0313-I1	I 55 Stev	W of IL 53	WI	187
L	EXP	0315-K2	I 55 Stev	E of Naperville Rd	WI	188
L	EXP	0316-K1	I 55 Stev	E of Weber Rd	WI	189
L	EXP	0317-K	I 55 Stev	N Weber Rd	WI	190
L	EXP	0321-L	I 55 Stev	IL 126	WI	191
L	EXP	0330-M	I 55 Stev	US 30 Lincoln Hwy	WI	192
L	EXP	0335-N	I 55 Stev	US 52 Jefferson St	WI	193
L	EXP	0340-O	I 55 Stev	IL 59 Brookforest Ave	WI	194
L	EXP	0345-P	I 55 Stev	I 80	WI	195

L	EXP	0350-R	I 55 Stev	US 6	WI	196
L	EXP	0355-S	I 55 Stev	Bluff Rd	WI	197
L	EXP	0360-T	I 55 Stev	WS Arsenal Frontage Rd	WI	198
L	EXP	0363-A	I 55 Stev	Arsenal Rd	WI	199
L	EXP	0365-U	I 55 Stev	Wilmington Rd	WI	200
L	EXP	0370-V	I 55 Stev	Lorenzo Rd	WI	201
L	EXP	0375-X	I 55 Stev	IL 129	WI	202
L	EXP	0380-Y	I 55 Stev	IL 113	WI	203
L	EXP	0385-Z	I 55 Stev	Reed Rd	WI	204
L	EXP	0515-B	I 57	Dralle Rd	WI	205
L	EXP	0525-M	I 57	Manhatten Monee Rd	WI	206
L	EXP	0535-D	I 57	Bruns Rd	WI	207
L	EXP	0540-E	I 57	Pauling Rd	WI	208
L	EXP	0560-Y	I 57	Wilmington Peotone Rd	WI	209
L	EXP	0703-I	I 80	IL 43 Harlem Ave	WI	210
L	EXP	0707-B	I 80	W of 80th Ave	WI	211
L	EXP	0713-D	I 80	W of 88th Ave	WI	212
L	EXP	0715-F	I 80	US 45 96th Ave	WI	213
L	EXP	0717-G	I 80	E of 104th Ave	WI	214
L	EXP	0724-K	I 80	I 355	WI	215
L	EXP	0728-N	I 80	US 30 Lincoln Hwy	WI	216
L	EXP	0730-P	I 80	Briggs St	WI	217
L	EXP	0735-R	I 80	N Richard St	WI	218
L	EXP	0740-S	I 80	S Richard St	WI	219
L	EXP	0750-U	I 80	IL 53 Chicago St	WI	220
L	EXP	0755-V	I 80	Water St	WI	221
L	EXP	0760-W	I 80	E Center St	WI	222
L	EXP	0765-X	I 80	W Center St	WI	223
L	EXP	0770-Y	I 80	Larkin Ave	WI	224
L	EXP	0775-Z	I 80	Houbolt Rd	WI	225

Sys.	Type	Loc. #	Main Route	Cross Street	Co.	Qty
L	ART	1603-AD	US 12 Rand Rd	US 12 45 Lee St	CO	1
L	ART	1604-XC	US 12 Rand Rd	IL 68 Dundee Rd	CO	2
L	ART	1605-AR	US 12 Rand Rd	Euclid St	CO	3
L	ART	1607-XI	US 12 Rand Rd	Lake Cook Rd	CO	4
L	ART	1610-AA	US 14 NW Hwy	Baldwin Rd	CO	5
L	ART	1615-AM	US 14 Dempster St	IL 21 Milwaukee Ave	CO	6
L	ART	1617-XH	US 14 Dempster St	IL 43 Waukegan Rd	CO	7
L	ART	1626-XL	US 14 Dempster St	I 294 Tollway	CO	8
L	ART	1627-XM	Busse Hwy	I 294 Tollway	CO	9

L	ART	1628-XN	Oakton St	I 294 Tollway	CO	10
L	ART	1629-XR	Touhy Ave	I 294 Tollway	CO	11
L	ART	1630-AC	US 20 Lake St	IL 59 Sutton Rd	CO	12
L	ART	1635-AY	US 20 Lake St	Shales Pkwy Bluff City Rd	CO	13
L	ART	1637-RB	IL 43 Waukegan Rd	I 94 Tollway	CO	14
L	ART	1640-AX	US 45 DesPlaines River	IL 21 Milwaukee Ave	CO	15
L	ART	1641-AO	US 45 Des Plaines River	IL 58 Golf Rd	CO	16
L	ART	1645-AV	US 45 IL 21 Milwaukee	Hintz Rd	CO	17
L	ART	1647-AK	US 45 IL 21Milwaukee	Lake Cook Rd	CO	18
L	ART	1650-AH	IL 59 Sutton Rd	IL 58 Golf Rd	CO	19
L	ART	1653-RG	IL 58 Golf Rd	Roselle Rd	CO	20
L	ART	1656-RH	IL 58 Golf Rd	Highland Blvd	CO	21
L	ART	1657-RE	IL 58 Golf Rd	IL 72 Higgins Rd	CO	22
L	ART	1658-RI	IL 58 Golf Rd	Gannon Dr	CO	23
L	ART	1659-RJ	IL 58 Golf Rd	Southbridge Ln	CO	24
L	ART	1662-AW	IL 59 Sutton Rd	IL 72 Higgins Rd	CO	25
L	ART	1663-AZ	IL 59 Sutton Rd	Shoe Factory Rd	CO	26
L	ART	1668-XK	IL 72 Higgins Rd	Barrington Rd	CO	27
L	ART	1673-RD	IL 72 Higgins Rd	Spring Mill Dr	CO	28
L	ART	1674-RF	IL 72 Higgins Rd	Churchill Rd	CO	29
L	ART	1675-AG	US 14 NW Hwy	IL 68 Dundee Rd	CO	30
L	ART	1677-RC	IL 72 Higgins Rd	Roselle Rd	CO	31
L	ART	1678-XF	IL 72 Higgins Rd	Morningside Dr	CO	32
L	ART	1683-AS	IL 83 Elmhurst Rd	Palatine Rd	CO	33
L	ART	1685-AB	Busse Highway	Oakton St	CO	34
L	ART	1691-XD	Willow Rd	I 294 Tollway	CO	35
L	ART	1703-BA	US12 20 45 LaGrange	IL 171 NE Ramp	CO	36
L	ART	1705-BL	US12 20 45 LaGrange	IL 171 SW Ramp	CO	37
L	ART	1706-BK	US12 20 45 LaGrange	Chicago Sanitary & Ship Canal	CO	38
L	ART	1707-YA	IL 38 Roosevelt Rd	Boeger St	CO	39
L	ART	1708-YB	IL 38 Roosevelt Rd	US 12 20 45 Mannheim Rd	CO	40
L	ART	1713-BZ	US 34 Ogden Ave	26th St	CO	41
L	ART	1714-BY	US 34 Ogden Ave	IL 50 Cicero Ave	CO	42
L	ART	1716-BW	US 34 Ogden Ave	Wolf Rd	CO	43
L	ART	1730-BX	IL 43 Harlem Ave	66th St	CO	44
L	ART	1732-BG	IL 64 North Ave	IL 171 1st Ave	CO	45
L	ART	1735-BC	22nd St Cermak Rd	IL 171 1st Ave	CO	46
L	ART	1760-YV	Damen Ave	Webster Ave	CO	47
L	ART	1762-YX	Western Ave	Logan Blvd	CO	48
L	ART	1763-YY	Sacramento Ave	Wellington Ave	CO	49
L	ART	1764-YZ	Kostner Ave	Berteau Ave	CO	50
L	ART	1802-CV	US 12 20 45 96th Ave	87th St	CO	51

L	ART	1803-CW	US 12 20 45 96th Ave	US 12 20 95th St	CO	52
L	ART	1804-CX	US 45 LaGrange Rd	107th St	CO	53
L	ART	1805-CY	US 45 LaGrange Rd	111th St	CO	54
L	ART	1810-CB	US 12 20 95th St	IL 43 Harlem Ave	CO	55
L	ART	1825-CE	US 45 LaGrange Rd	IL 83 Cal Sag Rd	CO	56
L	ART	1827-CH	IL 50 Cicero Ave	127th St	CO	57
L	ART	1830-CK	IL 1 Halsted Ave	I-80/294	CO	58
L	ART	1835-CA	IL 1 Halsted Ave	Ridge Rd	CO	59
L	ART	1845-CC	IL 83 Kingery Hwy	N IL 171 Archer Ave	CO	60
L	ART	1850-CD	IL 83 Kingery Hwy	S IL 171 Archer Ave	CO	61
L	ART	1860-CF	111th St	Austin Ave	CO	62
L	ART	1861-CG	111th St	Laramie Ave	CO	63
L	ART	1885-CT	US 6 159th St	Leavitt St	CO	64
L	ART	1886-CJ	US 6 159th St	CN RR Lincoln Ave	CO	65
L	ART	1887-CL	US 6 159th St	Park Ave	CO	66
L	ART	1888-CM	US 6 159th St	Center Ave	CO	67
L	ART	1910-DA	US 34 Ogden Ave	IL 83 Kingery Highway	DU	68
L	ART	1912-DH	IL 38 Roosevelt Rd	York Rd	DU	69
L	ART	1913-DU	IL 38 Roosevelt Rd	IL 83 NB Ramp	DU	70
L	ART	1914-DV	IL 83 Kingery Hwy	IL 56 EB Ramp	DU	71
L	ART	1922-DS	IL 53	I-88	DU	72
L	ART	1925-DM	IL 53	IL 56 Butterfield Rd	DU	73
L	ART	1935-DD	IL 56 Butterfield Rd	IL 59	DU	74
L	ART	1940-DJ	IL 56 Butterfield Rd	Highland Ave	DU	75
L	ART	1942-DP	IL 56 Butterfield Rd	22nd St Cermak Rd	DU	76
L	ART	1959-DU	IL 64 North Ave	IL 83 Kingery Highway	DU	77
L	ART	1960-DE	IL 64 North Ave	Main St in Lombard	DU	78
L	ART	1962-PY	IL 64 North Ave	Kramer Ave	DU	79
L	ART	1963-PZ	IL 64 North Ave	Ardmore ave	DU	80
L	ART	1964-PH	IL 64 North Ave	Swift Rd	DU	81
L	ART	1965-PI	IL 64 North Ave	Main St Glen Ellyn Rd	DU	82
L	ART	1966-PJ	IL 64 North Ave	Evergreen Ave	DU	83
L	ART	1967-PK	IL 64 North Ave	Linda Ave	DU	84
L	ART	1968-PL	IL 64 North Ave	Schmale Rd	DU	85
L	ART	1969-PM	IL 64 North Ave	Gary Ave	DU	86
L	ART	1970-PN	IL 64 North Ave	Kuhn Rd	DU	87
L	ART	1971-PO	IL 64 North Ave	Morton Rd	DU	88
L	ART	1972-PP	IL 64 North Ave	St. Charles Rd	DU	89
L	ART	1973-PR	IL 64 North Ave	Prince Crossing Rd	DU	90
L	ART	1974-PS	IL 64 North Ave	Woodcrest Dr	DU	91
L	ART	1975-DL	IL 83 Kingery Hwy	55th St	DU	92
L	ART	1980-DI	IL 83 Kingery Hwy	Bluff Rd	DU	93

L	ART	1983-DO	IL 83 Kingery Hwy	22nd St Cermak Rd	DU	94
L	ART	2010-KX	US 20 Lake St	Randall Rd	KA	95
L	ART	2015-KG	IL 47	US 30 & IL 56	KA	96
L	ART	2045-KO	IL 38 Roosevelt Rd	IL 47	KA	97
L	ART	2048-KA	IL 47	I-90	KA	98
L	ART	2050-KE	IL 47	Big Timber Rd	KA	99
L	ART	2055-KP	IL 47	Plank Rd	KA	100
L	ART	2060-KV	IL 47	Galena Rd	KA	101
L	ART	2065-KR	IL 56 Butterfield Rd	Kirk Rd	KA	102
L	ART	2070-KT	IL 72 Higgins Rd	Randall Rd	KA	103
L	ART	2075-KZ	IL 56 Butterfield Rd	Galena Rd	KA	104
L	ART	2103-EA	US 30 Briarcliff Rd	US 34 Owesgo Rd	KE	105
L	ART	2203-LX	US 12/ IL 59	IL 134 Long Lake Rd	LA	106
L	ART	2205-LS	IL 22 Half Day Rd	I 94	LA	107
L	ART	2207-LA	Deerfield Rd	Northland Ave	LA	108
L	ART	2211-LE	US 41 Skokie Highway	Deerfield Rd	LA	109
L	ART	2215-LR	US 41 Skokie Highway	IL 60 Town Line Rd	LA	110
L	ART	2217-LB	US 41 Skokie Highway	IL 120 Belvidere Rd	LA	111
L	ART	2220-LG	US 41 Skokie Highway	IL 132 Grand Ave	LA	112
L	ART	2221-LU	US 41 Skokie Highway	IL 173 Rosecrans Rd	LA	113
L	ART	2222-VG	IL 173 Rosecrans Rd	I 94 Tollway	LA	114
L	ART	2227-LL	US 41	Russell Rd	LA	115
L	ART	2230-LD	US 41 Skokie Highway	Washington St	LA	116
L	ART	2235-VA	IL 120 Belvidere Rd	Cohasset Ct	LA	117
L	ART	2236-VB	IL 120 Belvidere Rd	Greenleaf St	LA	118
L	ART	2237-VC	IL 120 Belvidere Rd	IL 43 Waukegan Rd	LA	119
L	ART	2239-VD	IL 120 Belvidere Rd	Lakehurst Rd	LA	120
L	ART	2243-LP	US 41 Skokie Highway	West Park Ave	LA	121
L	ART	2245-LF	IL 21 Milwaukee Ave	IL 120 Belevidere Rd	LA	122
L	ART	2247-LC	IL 21 Milwaukee Ave	I 94 Tollway	LA	123
L	ART	2250-LM	IL 21 Milwaukee Ave	IL 137 Buckley Rd	LA	124
L	ART	2255-LN	IL 43 Waukegan Rd	IL 137 Buckley Rd	LA	125
L	ART	2256-LK	IL 59	Grass Lake Rd	LA	126
L	ART	2267-VE	IL 60 Town Line Rd	Riverwoods Rd	LA	127
L	ART	2268-VF	IL 60 Town Line Rd	Saunders Rd	LA	128
L	ART	2270-LY	IL 131 Green Bay Rd	IL 137 Buckley Rd	LA	129
L	ART	2274-LJ	IL 137 Buckley Rd	I 94 Tollway	LA	130
L	ART	2276-LQ	IL 137 Sheridan Rd	MLK Jr Dr	LA	131
L	ART	2280-B	Amstutz Highway	Grand Ave	LA	132
L	ART	2285-A	Amstutz Highway	Greenwood Ave	LA	133
L	ART	2305-MA	US 14 Northwest Hwy	IL 31	MC	134
L	ART	2307-MB	IL 31	IL 62 Algonquin Rd	MC	135

L	ART	2310-MC	US 14 Northwest Hwy	IL 47	MC	136
L	ART	2313-MD	IL 31	Main St	MC	137
L	ART	2402-WZ	US 6 Southwest Hwy	I 355	WI	138
L	ART	2404-WA	US 30 Plainfield Rd	Larkin Ave	WI	139
L	ART	2415-WD	US 30 Cass St	Stevens St	WI	140
L	ART	2420-WW	US 45	US 52	WI	142
L	ART	2428-WY	IL 7 159th St	I 355	WI	143
L	ART	2430-WB	IL 7 Renwick Rd	IL 53 Broadway St	WI	144
L	ART	2435-WG	IL 50 Cicero Ave	Governors Highway	WI	145
L	ART	2442-HD	IL 53 Chicago St	US 52 Doris Ave	WI	146
L	ART	2445-WP	IL 53 Independence Ave	Joliet Rd	WI	147
L	ART	2448-WQ	IL 171 Archer Ave	I 355	WI	148
L	ART	2452-HB	IL 113 Main St	IL 53 Front & IL129 Washington	WI	149
L	ART	2455-WK	IL 394	Bemes Rd	WI	150
L	ART	2460-WL	IL 394	Faithorn Rd Burville Rd	WI	151
L	ART	2465-WM	IL 394	Cottage Grove Ave	WI	152
L	ART	2470-WT	IL 394	Elms Court Rd	WI	153
L	ART	2475-WO	IL 394	Exchange St	WI	154
L	ART	2478-WV	IL 394	IL 1	WI	155
L	ART	2480-WU	IL 394	Goodnow Rd	WI	156
L	ART	2490-WS	IL 394	Steger Rd	WI	157

Sys.	Type	Loc. #	Main Route	Cross Street	Co.	Qty
L	S/ART	1655-AJ	IL 58 Golf Rd	Wolf Rd CN RR	CO	1
L	S/ART	1660-AI	IL 59 Sutton Rd	IL 68 Dundee Rd	CO	2
L	S/ART	1670-AP	IL 62 Algonquin Rd	Palatine Rd	CO	3
L	S/ART	1687-AT	Palatine Rd	Wheeling Rd	CO	4
L	S/ART	1690-AU	Palatine Rd	Schoenbeck Rd	CO	5
L	S/ART	1709-BF	US12 20 45 Mannheim	22nd St Cermak Rd	CO	6
L	S/ART	1712-YD	US12 45 Mannheim Rd	Proviso RR Bridge	CO	7
L	S/ART	1717-BB	IL 38 Roosevelt Rd	I 294 Tollway	CO	8
L	S/ART	1815-CP	US 30 Lincoln Highway	IL 43 Harlem Ave	CO	9
L	S/ART	1820-CR	US 30 Lincoln Highway	Governors Hwy Crawford Ave	CO	10
L	S/AR	1823-CS	US 30 Lincoln Highway	Torrence Ave	CO	11

	T					
L	S/AR T	1903-DW	US 20 Lake St	Walnut St	DU	12
L	S/AR T	1920-PF	IL 38 Roosevelt Rd	Gary's Mill Rd	DU	13
L	S/AR T	1930-DR	IL 53	BNSF RR Bridge	DU	14
L	S/AR T	1951-PG	IL 59	Gary's Mill Rd	DU	15
L	S/AR T	1985-DT	IL 83 Kingery Hwy	St. Charles Rd	DU	16
L	S/AR T	2020-KH	IL 31 State St	W Big Timber Rd	KA	17
L	S/AR T	2025-KJ	IL 31 State St	E Big Timber Rd	KA	18
L	S/AR T	2030-KM	IL 31 2nd St State St	Indian Mounds Rd	KA	19
L	S/AR T	2035-KL	IL 31 State St	Judson Collage Entrance	KA	20
L	S/AR T	2040-KK	IL 31 State St	River Rd	KA	21
L	S/AR T	2105-EB	US 30	IL 47	KE	22
L	S/AR T	2224-LV	US 41 Skokie Highway	Kelly Rd	LA	23
L	S/AR T	2260-LH	IL 120 Belevidere Rd	Mill Rd Wildwood Rd	LA	24
L	S/AR T	2265-LO	IL 120 Belevidere Rd	O'Plaine Rd	LA	25
L	S/AR T	2275-LW	IL 137 Sheridan Rd	Wadsworth Rd	LA	26
L	S/AR T	2290-LZ	IL 22 Lake Zurich Rd	Ela Rd	LA	27
L	S/AR T	2330-MS	IL 47	S IL 176 Terra Cotta Ave	MC	28
L	S/AR T	2335-MN	IL 47	N IL 176 Terra Cotta Ave	MC	29
L	S/AR T	2405-WN	Il 126 Lockport Rd	Wallin Dr	WI	30
L	S/AR T	2410-WC	US 30 Cass St	Pilcher Park Entrance	WI	31
L	S/AR T	2425-WF	IL 1 Halsted St	Union	WI	32
L	S/AR T	2440-WH	IL 53 Broadway St	EJE RR	WI	33
L	S/AR T	2450-WJ	IL 171 Archer Ave	EJE RR	WI	34
L	S/AR T	2485-WR	IL 394	Richton Rd	WI	35

L	NAV	ASH	Ashland Ave & I 57	318.9-319.0	CO	36
L	NAV	43	IL 43 Harlem Ave	313.9-314.0	CO	37
L	NAV	I94	I 94 Bishop Ford	324.6 River Mile	CO	38
L	NAV	IL1	IL 1 Halsted St	320.1 River Mile	CO	39
L	NAV	WEST	Western Ave	318 River Mile	CO	40
L	NAV	KED	Kedzie Ave	316.9 River Mile	CO	41
L	NAV	CENT	Central Ave	316.2 River Mile	CO	42
L	NAV	IL50	IL 50 Cicero Ave	314.9 River Mile	CO	43
L	NAV	127	127th St	314.2 River Mile	CO	44
L	NAV	IL43	IL 43 Harlem Ave	311.5 River Mile	CO	45
L	NAV	SW	IL 7 Southwest Highway	310.7 River Mile	CO	46
L	NAV	LAG	US 12 20 45 LaGrange Rd	309.4 River Mile	CO	47
L	NAV	US45	US 45 96th Ave	308.4 River Mile	CO	48
L	NAV	WSP	Willow Springs Rd	307.9 River Mile	CO	49
L	NAV	IL83	IL 83 Kingery Highway	304.1 River Mile	CO	50
L	NAV	KING	IL 83 Kingery Highway	304.1 River Mile	CO	51
L	NAV	LEM	Lemont Rd State St	300.5 River Mile	CO	52
L	NAV	9TH	IL 7 9th St Lockport	292.7 River Mile	WI	53
L	NAV	BOAT	I 80 Access by Boat	287 River Mile	WI	54
L	NAV	55	I 55	277.9 River Mile	WI	55

Sys.	Type	Loc. #	Main Route	Address	Co.	Qty
L	FAC	BO	Biesterfield Bridge Office	1101 Biesterfield Rd	CO	1
L	FAC	CS	Addison Ave Cold Storage	US 12 20 Mannheim Rd	CO	2
L	FAC	DR	Dan Ryan Field Office	DesPlaines @ Taylor	CO	3
L	FAC	ETP	ETP	3501 Normal Ave Cgo	CO	4
L	FAC	MAT	IDOT Mat Lab	101 Center Ct Schaum	CO	5
L	FAC	MS	Monee Storage Yd	IL 50 & US 6	WI	6
L	FAC	SHA	Shales Pkwy Storage	525 Shales Pkwy	KA	7
L	HAR	290A	I 290 IB	Ashland Ave	CO	8
L	HAR	290E	I 290 OB	Westchester	CO	9
L	HAR	290T	I 290 IB	Thorndale Ave	CO	10
L	HAR	186TH	IL 394 IB	186th St	CO	11
L	HAR	I294	I 55 IB	I 294	CO	12
L	HAR	JAR	I 80 WB	Jarnecke	CO	13
L	HAR	LIN	I 80 EB	Lincoln Oasis	CO	14
L	HAR	NAG	I 90 IB	Nagle Ave	CO	15
L	HAR	190	I 190 IB	I 294	CO	16
L	HAR	WELLS	I 290	Wells St	CO	17
L	HAR	TOW	I 94 IB	Tower Rd	CO	18
L	HAR	59TH	I 90 94 IB	159th St	CO	19
L	MB	BRAN	River	Brandon	WI	20
L	MB	CASS	River	Cass St	WI	21
L	MB	JACK	River	Jackson St	WI	22
L	MB	JEFF	River	Jefferson St	WI	23
L	MB	MCDN	River	McDonough St	WI	24
L	MB	RUBY	River	Ruby St	WI	25
L	MB	BO	Bridge Office	Joliet	WI	26
L	MY	55	I 55 Yard	Route 5	WI	27
L	MY	57	I 57 Yard	16010 S Crawford Ave	CO	28
L	MY	AL	Alsip Yard	11801 S Ridgeland Ave	CO	29
L	MY	AR	Arlington Heights Yd	210 E Noyse	CO	30
L	MY	BB	Birds Bridge Yard	I 55 & US 6	WI	31
L	MY	BF	Bishop Ford Yard	16915 Van Dam Rd	CO	32
L	MY	DR	Dan Ryan Yard	6543 S Wentworth Ave	CO	33
L	MY	ED	Edens Yard	2 Happ Rd	CO	34
L	MY	GRA	Grayslake Yard	219 N Baron Blvd	LA	35
L	MY	GUR	Gurnee Yard	3516 W Washington St	LA	36
L	MY	HAR	Harvey Yard	16738 S Lathrop Ave	CO	37
L	MY	HIL	Hillside Yard/BS	East Ave & May St	CO	38
L	MY	IK	Eisenhower Yard	5201 W Flournoy St	CO	39

L	MY	JO	Joliet Yard	Caton Farm Rd & IL 53	WI	40
L	MY	KEN	Kennedy Yard	5027 N Central Ave	CO	41
L	MY	LAN	Landscape Yard	1260 W Augusta Blvd	CO	42
L	MY	NAP	Naperville Yard	28 W 731 Ogden Ave	DU	43
L	MY	NB	Northbrook Yard	1916 Techny Rd	CO	44
L	MY	NL	New Lenox Yard	I 80 & US 30	WI	45
L	MY	NS	Northside Yard	4051 N Harlem Ave	CO	46
L	MY	OAK	Oakbrook Yard	17 W 125 Butterfield Rd	DU	47
L	MY	ROD	Rodenburg Yd/BS/CC	1480 Rodenburg Rd	CO	48
L	MY	STC	St Charles Yard	38 W 027 IL 38	KA	49
L	MY	STEV	Stevenson Yard	Joliet Rd & 1st Ave	CO	50
L	MY	WD	Woodstock Yard	11916 Catalpa Lane	MC	51
L	RA	PEOI	Prairieview Rest Area	I 57 IB @ Peotone	WI	52
L	RA	PEOO	Prairieview Rest Area	I 57 OB @ Peotone	WI	53
L	SP	ISP2	ISP 2	777 S State St	KA	54
L	SS	ELG	Elgin Sign Shop	595 S State St	KA	55
L	SS	LZ	Lake Zurich SS/Yd	700 S Ela Rd	LA	56
L	SS	NL	New Lenox SS	I 80 & US 30	WI	57
L	SS	NSS	Northside Sign Shop	7151 Forest Preserve Dr	CO	58
L	SS	SS	Southside Sign Shop	15940 Pulaski Rd	CO	59
L	VIA	214	Matteson Viaduct 214	Governors Hwy & 214th St	CO	60
L	VIA	219	Matteson Viaduct 219	Governors Hwy & 219th St	CO	61
L	WS	12	Weigh Station	US 12 & Burlington Rd/Richmond	MC	62
L	WS	14	Weigh Station	US 14 & Crowley Rd/Harvard	MC	63
L	WS	30	Weigh Station	US 30 E of Torrence/Chicago Hts	CO	64
L	WS	83	Weigh Station	IL 83 & St Charles/Elmhurst	DU	65
L	WS	41I	Weigh Station	US 41 IB @ Rosecrans	LA	66
L	WS	41O	Weigh Station	US 41 OB @ Wadsworth	LA	67
L	WS	55I	Weigh Station	I 55 IB W of IL 53/Bolingbrook	WI	68
L	WS	55O	Weigh Station	I 55 OB W of IL 53/Bolingbrook	WI	69
L	WS	57I	Weigh Station	I 57 N of US 52/Peotone	WI	70
L	WS	57O	Weigh Station	I 57 N of US 52/Peotone	WI	71
L	WS	80I	Weigh Station	I 80 IB E of Townline/Frankfort	WI	72
L	WS	80O	Weigh Station	I 80 OB E of Townline/Frankfort	WI	73

PUMP STATION SYSTEM – EMC MAINTAINED LOCATIONS

AT TIME OF CONTRACT DEVELOPMENT

Sys.	Type	Loc. #	Main Route	Cross Street	Co.	Qty
P	PS-L	PS02	I 94	Winnetka Rd	CO	1
P	PS-L	PS03	I 94	Caldwell Peterson	CO	2
P	PS-L	PS04	I 290	E of 1st Ave	CO	3
P	PS-L	PS05	I 290	Des Plaines Ave	CO	4
P	PS-L	PS07	I-290	Well St	CO	5
P	PS-L	PS09	US 45 Mannheim	US 20 Lake St	CO	6
P	PS-L	PS10	US 14 Dempster	IL 21 Milwaukee Ave	CO	7
P	PS-L	PS21	I 94	72nd St	CO	8
P	PS-L	PS22	I 90 94	Fulton Ave	CO	9
P	PS-L	PS23	I 90 94	Roscoe St	CO	10
P	PS-L	PS25	US 12 20 95th St	IL 43 Harlem Ave	CO	11
P	PS-L	PS26	I 90 94	Roosevelt Rd	CO	12
P	PS-L	PS28	IL 50 Cicero Ave	US 34 Ogden Ave	CO	13
P	PS-L	PS29	I 90 94	Wallace St	CO	14
P	PS-L	PS30	I 55	Homan Ave	CO	15
P	PS-L	PS31	111th St	Central Ave	CO	16
P	PS-L	PS33	Palatine Rd	IL 21 Milwaukee Ave	CO	17
P	PS-L	PS34	I 290	Emroy Ave	DU	18
P	PS-L	PS35	I 57	127th St	CO	19
P	PS-L	PS36	IL 43 Harlem Ave	176th St	CO	20
P	PS-L	PS39	IL 60 Kennedy Rd	W of US 41 Skokie	LA	21
P	PS-L	PS40	US 45 Lake Ave	N of IL 60 Towne Line	LA	22
P	PS-L	PS42	IL 47	IL 72	KA	23
P	PS-L	PS44	IL 83 Kingery Hwy	S of IL 64 North Ave	DU	24
P	PS-L	PS46	US 41 Skokie Hwy	Clavey Rd	LA	25
P	PS-L	PS52	IL 59	IL 126	WI	26

Sys.	Type	Loc. #	Main Route	Cross Street	Co.	Qty

P	PS-S	PS08	US 14 NW Hwy	1 2 Mi E of US 12 45	CO	1
P	PS-S	PS11	IL 50 Cicero Ave	158th St	CO	2
P	PS-S	PS12	IL 64 North Ave	W of 25th Ave	CO	3
P	PS-S	PS13	US 41 Skokie Blvd	S of Oakton St	CO	4
P	PS-S	PS14	Ashland Ave	139th St	CO	5
P	PS-S	PS15	79th St	Kedzie Ave	CO	6
P	PS-S	PS16	IL 72 Higgins Rd	E of US 12 45	CO	7
P	PS-S	PS17	IL 58 Golf Rd	US 45 River Rd	CO	8
P	PS-S	PS18	US 6 159th St	Park Ave	CO	9
P	PS-S	PS19	US 6 159th St	IL 50 Cicero Ave	CO	10
P	PS-S	PS20	I 290	W of Wolf Rd	CO	11
P	PS-S	PS32	IL 64 North Ave	1st Ave	CO	12
P	PS-S	PS37	US 41 Skokie Hwy	IL 176 Rockland Rd	LA	13
P	PS-S	PS38	US 41 Skokie Hwy	Deerpath Ave	LA	14
P	PS-S	PS41	US 41 Skokie Hwy	N of IL 176 Rockland	LA	15
P	PS-S	PS43	US 41 Skokie Hwy	N of IL 132 Grand Ave	LA	16
P	PS-S	PS48	IL 56 Butterfield Rd	W of IL 59	DU	17
P	PS-S	PS50	IL 22 Half Day Rd	US 41 Skokie Hwy	LA	18
P	PS-S	PS51	127th St	E of Crawford Ave	CO	19

SURVEILLANCE SYSTEM – EMC LOCATIONS AT THE TIME OF CONTRACT DEVELOPMENT

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-1b	2005	A2	I 57	IL 1 Halsted St	CO	1
S	S-1a	3095	F118	I 90 JFK IB Ent	Canfield Ave	CO	2
S	S-1a	3105	F109	I 90 JFK	IL 43 Harlem Ave	CO	3
S	S-1a	3110	F114	I 90 JFK	IL 43 Harlem Ave	CO	4
S	S-1a	3125	G112	I 90 JFK	IL 43 Harlem Ave	CO	5
S	S-1a	3135	G110	I 90 JFK	Sayre Ave	CO	6
S	S-1a	3140	H101	I 90 JFK	Nagle Ave	CO	7
S	S-1a	3155	H106	I 90 JFK	Bryn Mawr Ave	CO	8
S	S-1a	3165	H97	I 90 JFK	Foster Ave	CO	9
S	S-1a	3175	I102	I 90 JFK	Foster Ave	CO	10
S	S-1a	3185	I100	I 90 JFK	Central Ave Ent	CO	11
S	S-1a	3210	J91	I 90 JFK	Lawrence Ave	CO	12
S	S-1a	3215	J94A	I 90 JFK	Lawrence Ave	CO	13
S	S-1a	3240	J92	I 90 94 JFK	Montrose Ave	CO	14
S	S-1a	3245	K77	I 90 94 JFK	Keeler Ave	CO	15
S	S-1a	3270	K84	I 90 94 JFK	Pulaski Rd	CO	16
S	S-1a	3275	K86	I 90 94 JFK	IL 19 Irving Park Rd	CO	17
S	S-1a	3310	L76	I 90 94 JFK	Avondale Ave	CO	18
S	S-1a	3320	L65	I 90 94 JFK	Kimball Ave	CO	19
S	S-1a	3325	L72	I 90 94 JFK	Kimball Ave	CO	20
S	S-1a	3340	L70	I 90 94 JFK	Kedzie Ave	CO	21
S	S-1a	3350	M57	I 90 94 JFK	California Ave	CO	22
S	S-1a	3365	M66	I 90 94 JFK	Sacramento Blvd	CO	23
S	S-1a	3385	M62	I 90 94 JFK	Diversey Ave	CO	24
S	S-1a	3390	N51	I 90 94 JFK	Fullerton Ave	CO	25
S	S-1a	3405	N58	I 90 94 JFK	Fullerton Ave	CO	26
S	S-1a	3415	N56	I 90 94 JFK	Webster Ave	CO	27
S	S-1a	3420	O45	I 90 94 JFK	Armitage Ave	CO	28
S	S-1a	3435	O52	I 90 94 JFK	Armitage Ave	CO	29
S	S-1a	3445	P41A	I 90 94 JFK	IL 64 North Ave	CO	30
S	S-1a	3450	P48	I 90 94 JFK	IL 64 North Ave	CO	31
S	S-1a	3460	R39	I 90 94 JFK	Division St	CO	32
S	S-1a	3465	R44	I 90 94 JFK	Division St	CO	33
S	S-1a	3480	R42	I 90 94 JFK	Augusta Blvd	CO	34
S	S-1a	3485	R35	I 90 94 JFK	Ogden Ave	CO	35
S	S-1a	3525	Y28	I 90 94 JFK	Lake St Ent	CO	36
S	S-1a	3565	Y23	I 90 94 JFK	Washington Blvd	CO	37

S	S-1a	3595	Y15	I 90 94 JFK	Monroe St	CO	38
S	S-1a	4010	2	I 94 Edens	Wilson Ave	CO	39
S	S-1a	4015	3	I 94 Edens	Wilson Ave	CO	40
S	S-1a	4020	B4	I 94 Edens	Elston Ave	CO	41
S	S-1a	4025	B5	I 94 Edens	Foster Ave	CO	42
S	S-1a	4040	C8	I 94 Edens	Peterson Ave	CO	43
S	S-1a	4045	C9	I 94 Edens	Peterson Ave	CO	44
S	S-1a	4050	C10	I 94 Edens	Peterson Ave	CO	45
S	S-1a	4065	E12	I 94 Edens	Touhy Ave	CO	46
S	S-1a	4070	E15	I 94 Edens	Touhy Ave	CO	47
S	S-1a	4075	E16	I 94 Edens	Touhy Ave	CO	48
S	S-1a	4080	E17	I 94 Edens	Touhy Ave	CO	49
S	S-1a	4100	H21	I 94 Edens	Dempster St	CO	50
S	S-1a	4105	H22	I 94 Edens	Dempster St	CO	51
S	S-1a	4110	H23	I 94 Edens	Dempster St	CO	52
S	S-1a	4115	H24	I 94 Edens	Dempster St	CO	53
S	S-1b	5015	68	I 94 Ryan NB	95th St Ent	CO	54
S	S-1b	5035	65	I 94 Ryan SB	87th St Ent	CO	55
S	S-1b	5040	64	I 94 Ryan NB	87th St Ent	CO	56
S	S-1b	5055	62	I 94 Ryan NB	83rd St Ent	CO	57
S	S-1b	5070	58	I 94 Ryan NB	79th St Ent	CO	58
S	S-1b	5075	59	I 94 Ryan SB	79th St Ent	CO	59
S	S-1b	5085	57	I 94 Ryan SB	76th St Ent	CO	60
S	S-1b	5105	56	I 94 Ryan NB	75th St Ent	CO	61
S	S-1c	5115	52	I 94 Ryan NB	71st St Ent	CO	62
S	S-1b	5120	53	I 94 Ryan SB	71st St Ent	CO	63
S	S-1b	5125	49	I 94 Ryan SB	67th St Ent	CO	64
S	S-1b	5145	46	I 94 Ryan NB	63rd St Ent	CO	65
S	S-1b	5160	45	I 90 94 Ryan SB	59th St Ent	CO	66
S	S-1b	5195	41	I 90 94 Ryan SB	55th St Ent	CO	67
S	S-1b	5210	42	I 90 94 Ryan	55th St Ent	CO	68
S	S-1b	5225	37	I 90 94 Ryan SB	47th St Ent	CO	69
S	S-1b	5235	38	I 90 94 Ryan	47th St Ent	CO	70
S	S-1b	5250	35A	I 90 94 Ryan	43rd St Ent	CO	71
S	S-1b	5255	36	I 90 94 Ryan	43rd St Ent	CO	72
S	S-1b	5290	31	I 90 94 Ryan SB	39th St Ent	CO	73
S	S-1a	5385	C5	I 90 94 Ryan	Roosevelt Rd	CO	74
S	S-1b	6255	M2	I 94 Ford	99th Pl Wabash Ent	CO	75
S	S-1a	8005	F0	I 290 IKE	Canal St	CO	76
S	S-1a	8040	G8	I 290 IKE	Ashland Ave	CO	77

S	S-1a	8060	H11A	I 290 IKE	Damen Ave & Paulina	CO	78
S	S-1a	8085	H15	I 290 IKE	Western Ave	CO	79
S	S-1a	8095	H16	I 290 IKE	California Ave	CO	80
S	S-1a	8105	I19	I 290 IKE	Sacramento Blvd	CO	81
S	S-1a	8110	I20	I 290 IKE	Homan Ave	CO	82
S	S-1a	8120	J22	I 290 IKE	Independence Blvd	CO	83
S	S-1a	8135	J27	I 290 IKE	Independence Blvd	CO	84
S	S-1a	8140	J26	I 290 IKE	Kostner Ave	CO	85
S	S-1a	8160	K33	I 290 IKE	IL 50 Cicero Ave	CO	86
S	S-1a	8165	K30	I 290 IKE	Laramie Ave	CO	87
S	S-1a	8175	L32	I 290 IKE	Central Ave	CO	88
S	S-1a	8195	L39	I 290 IKE	Central Ave	CO	89
S	S-1a	8210	M43	I 290 IKE	Austin Blvd	CO	90
S	S-1a	8230	M40	I 290 IKE	IL 43 Harlem Ave	CO	91
S	S-1a	8240	M49	I 290 IKE	IL 43 Harlem Ave	CO	92
S	S-1a	8255	N53	I 290 IKE	Des Plaines Ave	CO	93
S	S-1a	8265	O48	I 290 IKE	IL 171 1st Ave	CO	94
S	S-1a	8280	O59	I 290 IKE	IL 171 1st Ave	CO	95
S	S-1a	8285	P52	I 290 IKE	9th Ave	CO	96
S	S-1a	8295	P54	I 290 IKE	17th Ave	CO	97
S	S-1a	8310	P65	I 290 IKE	17th Ave	CO	98
S	S-1a	8315	R58	I 290 IKE	25th Ave	CO	99
S	S-1a	8320	R60	I 290 IKE	25th Ave	CO	100
S	S-1a	8340	R69	I 290 IKE	Addison Creek	CO	101
S	S-1a	8345	S64	I 290 IKE	Mannheim Rd SE	CO	102
S	S-1a	8350	S66	I 290 IKE	Mannheim Rd SW	CO	103
S	S-1a	8370	S75	I 290 IKE	Mannheim Rd NW	CO	104
S	S-1a	8375	T70	I 290 IKE	Hillside Car Max Ent	CO	105

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-2a	1010	B3	I 55 Stev	State St	CO	1
S	S-2a	1015	C2	I 55 Stev	26th St & Wentworth	CO	2
S	S-2a	1020	C5	I 55 Stev	26th St & Wentworth	CO	3
S	S-2a	1025	C4	I 55 Stev	W Wentworth Ave	CO	4
S	S-2a	1030	C7	I 55 Stev	W Wentworth Ave	CO	5
S	S-2a	1035	Y15	I 55 Stev	I 90 94 Ryan Inter	CO	6
S	S-2a	1040	Y16	I 55 Stev	I 90 94 Ryan Inter	CO	7
S	S-2a	1045	Y17	I 55 Stev	I 90 94 Ryan Inter	CO	8
S	S-2k	1047	MCD	I 55 Stev	I 90 94 Ryan Cross Con	CO	9
S	S-2a	1050	Y18	I 55 Stev	I 90 94 Ryan I 55 Inter	CO	10

S	S-2a	1055	6	I 55 Stev	Archer Ave & Mary St	CO	11
S	S-2a	1060	8	I 55 Stev	Lock St	CO	12
S	S-2a	1065	10	I 55 Stev	Wood St	CO	13
S	S-2a	1075	12	I 55 Stev	Hoyne Ave	CO	14
S	S-2a	1080	14	I 55 Stev	Penn RR	CO	15
S	S-2a	1100	16	I 55 Stev	Kedzie & California Ave	CO	16
S	S-2a	1105	18	I 55 Stev	Kedzie & California Ave	CO	17
S	S-2a	1110	20	I 55 Stev	Kedzie & California Ave	CO	18
S	S-2a	1115	9	I 55 Stev	Pulaski Rd ATSF RR (east)	CO	19
S	S-2a	1120	H11	I 55 Stev	Pulaski Rd	CO	20
S	S-2a	1125	22	I 55 Stev	Pulaski Rd	CO	21
S	S-2a	1130	13	I 55 Stev	IL 50 Cicero Ave	CO	22
S	S-2a	1135	TDC1	I 55 Stev	IL 50 Cicero Ave	CO	23
S	S-2a	1140	15	I 55 Stev	IL 50 Cicero Ave OB Exit	CO	24
S	S-2a	1150	26	I 55 Stev	IL 50 Cicero Ave IB RS	CO	25
S	S-2a	1160	24	I 55 Stev	IL 50 Cicero Ave	CO	26
S	S-2a	1165	17	I 55 Stev	Central Ave	CO	27
S	S-2a	1170	28	I 55 Stev	Central Ave	CO	28
S	S-2a	1175	30	I 55 Stev	Central Ave IL 43 Harlem	CO	29
S	S-2a	1180	32	I 55 Stev	60th IB RS	CO	30
S	S-2a	1185	19	I 55 Stev	Central Ave IL 43 Harlem	CO	31
S	S-2a	1190	21	I 55 Stev	Central Ave IL 43 Harlem	CO	32
S	S-2a	1195	23	I 55 Stev	IL 43 Harlem Ave	CO	33
S	S-2a	1205	34	I 55 Stev	IL 43 Harlem Ave	CO	34
S	S-2a	1210	25	I 55 Stev	IL 43 Harlem Ave	CO	35
S	S-2a	1215	36	I 55 Stev	IL 43 Harlem Ave	CO	36
S	S-2a	1220	27	I 55 Stev	75th West	CO	37
S	S-2a	1235	38	I 55 Stev	Lawndale Ave IB	CO	38
S	S-2a	1250	42	I 55 Stev	B&O RR 83rd (west)	CO	39
S	S-2a	1255	44	I 55 Stev	86th W	CO	40
S	S-2a	1260	46	I 55 Stev	88th W	CO	41
S	S-2a	1265	P50	I 55 Stev	91st W	CO	42
S	S-2a	1270	R43	I 55 Stev	97th W	CO	43
S	S-2a	1275	R45	I 55 Stev	US 12 20 45 LaGrange Rd	CO	44
S	S-2a	1280	R47	I 55 Stev	US 12 20 45 LaGrange Rd	CO	45
S	S-2a	1285	R52	I 55 Stev	US 12 20 45 LaGrange Rd	CO	46
S	S-2a	1290	R54	I 55 Stev	US 12 20 45 LaGrange Rd SW	CO	47
S	S-2a	1295	R49	I 55 Stev	Willow Springs Rd (east)	CO	48

S	S-2a	1300	R49A	I 55 Stev	Willow Springs Rd OB (east)	CO	49
S	S-2a	1305	S51	I 55 Stev	I 294	CO	50
S	S-2a	1310	S56	I 55 Stev	109th St	CO	51
S	S-2a	1315	S53	I 55 Stev	I 294 Tollway	CO	52
S	S-2a	1320	S55	I 55 Stev	Joliet Rd	CO	53
S	S-2a/f	2000	A3	I 57	C&W RR	CO	54
S	S-2a/f	2015	B7	I 57	IL 1 Halsted St	CO	55
S	S-2a/f	2020	B4	I 57	100th St	CO	56
S	S-2a/f	2025	B6	I 57	104th St	CO	57
S	S-2a/f	2030	C9	I 57	107th St	CO	58
S	S-2a	2035	C8	I 57	111th St	CO	59
S	S-2a	2040	C11	I 57	111th St	CO	60
S	S-2a/f	2050	D13	I 57	111th St	CO	61
S	S-2a/f	2055	D12	I 57	119th St	CO	62
S	S-2a/f	2060	E14	I 57	119th St	CO	63
S	S-2a/f	2065	D12A	I 57	119th St	CO	64
S	S-2a/f	2075	F16	I 57	127th St	CO	65
S	S-2a	2080	F19	I 57	127th St	CO	66
S	S-2a/f	2085	G18	I 57	127th St	CO	67
S	S-2a	2095	G20	I 57	Cal Sag Channel	CO	68
S	S-2a/f	2100	H22	I 57 IB	B&O RR	CO	69
S	S-2a/f	2105	H24	I 57 IB	IHB RR	CO	70
S	S-2a/f	2110	I26	I 57 IB	IHB RR (half mile south)	CO	71
S	S-2a	2115	I23	I 57 OB	IL 83 Sibley (half mile south)	CO	72
S	S-2a	2120	J25	I 57 OB	IL 83 147th St Sibley Blvd	CO	73
S	S-2a	2125	J28	I 57 IB	IL 83 147th St Sibley Blvd	CO	74
S	S-2a	2135	J32	I 57	I 294 Tollway	CO	75
S	S-2a	2140	K27	I 57	Kedzie Ave (north)	CO	76
S	S-2a	2145	K29	I 57	155th St	CO	77
S	S-2a	2155	L33	I 57	US 6 159th St	CO	78
S	S-2a	2160	L34	I 57	US 6 159th St	CO	79
S	S-2a/f	2165	L35	I 57	US 6 159th St	CO	80
S	S-2a	2170	L36	I 57	US 6 159th St	CO	81
S	S-2a/f	2175	M37	I 57	163rd St	CO	82
S	S-2a	2180	N39	I 57	167th St	CO	83
S	S-2a/f	2190	N43	I 57	167th St	CO	84
S	S-2a	2195	O38	I 57	167th St	CO	85
S	S-2a	2205	O42	I 57	167th St	CO	86
S	S-2a/f	2210	T45	I 57	Cicero Ave (west)	CO	87
S	S-2a/f	2215	T47	I 57	Cicero Ave (half mile	CO	88

					west)		
S	S-2a	2220	T44	I 57	I 80 Interchange	CO	89
S	S-2a	2225	T46	I 57	I 80 Interchange	CO	90
S	S-2a	2230	T49	I 57	I 80 Interchange	CO	91
S	S-2a	2235	U48	I 57	I 80 Interchange	CO	92
S	S-2a	2240	U51	I 57	I 80 Interchange	CO	93
S	S-2a	2245	U53	I 57	I 80 Interchange	CO	94
S	S-2a	3000	C131	I 90 JFK	O'Hare Airport Parking Lot C	CO	95
S	S-2a	3005	C127	I 90 JFK	US 12 45 Mannheim Rd	CO	96
S	S-2a	3007	C127A	I 90 JFK	US 12 45 Mannheim Rd	CO	97
S	S-2a	3010	C129	I 90 JFK	US 12 45 Mannheim Rd	CO	98
S	S-2h	3015	C134	I 190	US 12 45 Mannheim Rd	CO	99
S	S-2h	3020	C136	I 190	US 12 45 Mannheim Rd	CO	100
S	S-2a	3025	C123	I 90 JFK	I 90 Toll Plaza	CO	101
S	S-2a	3030	C125	I 90 JFK	I 90 Toll Plaza	CO	102
S	S-2a	3035	C130	I 90 JFK	I 90 Toll Plaza	CO	103
S	S-2a	3040	C132	I 90 JFK	I 90 Toll Plaza	CO	104
S	S-2a	3045	D119	I 90 JFK	Des Plaines River Rd	CO	105
S	S-2a	3050	D121	I 90 JFK	Des Plaines River Rd	CO	106
S	S-2a	3055	D126	I 90 JFK	Des Plaines River Rd	CO	107
S	S-2a	3060	D128	I 90 JFK	Des Plaines River Rd	CO	108
S	S-2a	3065	D124	I 90 JFK	East River Rd	CO	109
S	S-2k	3067	MCD6	I 90 JFK	East River Rd	CO	110
S	S-2a	3090	F111	I 90 JFK	Canfield Ave	CO	111
S	S-2a	3100	F107	I 90 JFK	IL 43 Harlem Ave	CO	112
S	S-2a	3115	F116	I 90 JFK	IL 43 Harlem Ave	CO	113
S	S-2a	3120	G105	I 90 JFK	IL 43 Harlem Ave	CO	114
S	S-2a	3130	G103	I 90 JFK	Sayre Ave	CO	115
S	S-2a	3145	H108	I 90 JFK	Nagle Ave	CO	116
S	S-2a	3150	H99	I 90 JFK	Bryn Mawr Ave	CO	117
S	S-2a	3160	H104	I 90 JFK	Meade Ave	CO	118
S	S-2a	3170	I95	I 90 JFK	Foster Ave	CO	119
S	S-2a	3180	I93	I 90 JFK	Central Ave	CO	120
S	S-2a	3190	I100A	I 90 JFK	Central Ave	CO	121
S	S-2a	3195	I98	I 90 JFK	Milwaukee Ave	CO	122
S	S-2a	3200	J87	I 90 JFK	Lawrence Ave	CO	123
S	S-2a	3205	J89	I 90 JFK	Lawrence Ave	CO	124
S	S-2a	3220	J96	I 90 JFK	Lawrence Ave	CO	125
S	S-2a	3225	98	I 90 JFK	IL 50 Cicero Ave	CO	126
S	S-2a	3230	94	I 90 JFK	IL 50 Cicero Ave	CO	127
S	S-2k	3232	MCD1	I 90 JFK	Montrose Ave	CO	128
S	S-2a	3235	81	I 90 JFK	Montrose Ave	CO	129

S	S-2a	3238	92A	I 90 JFK	Montrose Ave	CO	130
S	S-2a	3250	79	I 90 JFK	Kostner Ave	CO	131
S	S-2a	3253	77A	I 90 JFK	Keeler Ave	CO	132
S	S-2a	3255	90	I 90 JFK	Keeler Ave	CO	133
S	S-2a	3260	73	I 90 JFK	Pulaski Rd	CO	134
S	S-2a	3290	L67	I 90 JFK	Addison Rd	CO	135
S	S-2a	3295	L69	I 90 JFK	Addison Rd	CO	136
S	S-2l	3300	78	I 90 JFK	Addison Rd	CO	137
S	S-2a	3315	L63	I 90 JFK	Kimball Ave	CO	138
S	S-2a	3330	L74	I 90 94 JFK	Kimball Ave	CO	139
S	S-2a	3335	L61	I 90 94 JFK	Belmont Ave	CO	140
S	S-2a	3345	M55	I 90 94 JFK	Sacramento Blvd	CO	141
S	S-2a	3375	M64	I 90 94 JFK	California Ave	CO	142
S	S-2a	3380	M53	I 90 94 JFK	Diversey Ave	CO	143
S	S-2a	3395	N60	I 90 94 JFK	Fullerton Ave	CO	144
S	S-2a	3400	N49	I 90 94 JFK	Fullerton Ave	CO	145
S	S-2a	3410	N47	I 90 94 JFK	Webster Ave	CO	146
S	S-2a	3425	O45	I 90 94 JFK	Armitage Ave	CO	147
S	S-2a	3430	O43	I 90 94 JFK	Armitage Ave	CO	148
S	S-2a	3440	P41	I 90 94 JFK	North Ave	CO	149
S	S-2a	3455	O50	I 90 94 JFK	North Ave	CO	150
S	S-2a	3462	R39A	I 90 94 JFK	Division St	CO	151
S	S-2a	3470	R46	I 90 94 JFK	Division St	CO	152
S	S-2a	3475	R37	I 90 94 JFK	Augusta Blvd	CO	153
S	S-2a	3490	R40	I 90 94 JFK	Chicago Ave	CO	154
S	S-2a	3495	S31	I 90 94 JFK	Ohio St	CO	155
S	S-2a	3500	S33	I 90 94 JFK	Ohio St	CO	156
S	S-2a	3510	S32	I 90 94 JFK	Ohio St Feeder	CO	157
S	S-2a	3515	S34	I 90 94 JFK	Ohio St Feeder	CO	158
S	S-2a	3520	S36	I 90 94 JFK	Green St	CO	159
S	S-2a	3530	Y30	I 90 94 JFK	Lake St	CO	160
S	S-2a	3540	Y26	I 90 94 JFK	Randolph St	CO	161
S	S-2a	3545	Y27	I 90 94 JFK	Randolph St	CO	162
S	S-2a	3558	Y22S	I 90 94 JFK	Washington Blvd	CO	163
S	S-2a	3560	Y22	I 90 94 JFK	Washington Blvd	CO	164
S	S-2a	3580	Y18	I 90 94 JFK	Madison Ave	CO	165
S	S-2a	3585	Y19	I 90 94 JFK	Madison Ave	CO	166
S	S-2a	3610	Z12	I 90 94 JFK	Monroe St	CO	167
S	S-2a	3615	Z14	I 90 94 JFK	Monroe St	CO	168
S	S-2a	3620	Z8	I 90 94 JFK	Adams St	CO	169
S	S-2a	3630	Z11	I 90 94 JFK	Adams St	CO	170
S	S-2a	3640	Z1	I 90 94 JFK	I 290 Circle Interchange	CO	171

S	S-2a	3650	Z3	I 90 94 JFK	I 290 Circle Interchange	CO	172
S	S-2a	3655	Z4	I 90 94 JFK	I 290 Circle Interchange	CO	173
S	S-2a	3660	Z5	I 90 94 JFK	I 290 Circle Interchange	CO	174
S	S-2a	3665	Z6	I 90 94 JFK IB Van B	I 290 Circle Interchange	CO	175
S	S-2a	3670	Z7	I 90 94 JFK OB Van B	I 290 Circle Interchange	CO	176
S	S-2k	3675	MCD5	I 90 94 JFK	I 290 Circle Interchange	CO	177
S	S-2a	4000	A2A	I 94 Edens	Wilson Ave	CO	178
S	S-2a	4005	A1	I 94 Edens	Wilson Ave	CO	179
S	S-2k	4016	MCD1	I 94 Edens	Wilson Ave	CO	180
S	S-2k	4018	MCD1	I 94 Edens	Wilson Ave	CO	181
S	S-2a	4030	B6	I 94 Edens	IL 50 Cicero Ave	CO	182
S	S-2a	4035	C7	I 94 Edens	Peterson Ave	CO	183
S	S-2a	4055	D11	I 94 Edens	Devon Ave	CO	184
S	S-2a	4060	D13	I 94 Edens	Pratt Ave	CO	185
S	S-2a	4085	E19	I 94 Edens	Niles Center Rd	CO	186
S	S-2a	4090	G18	I 94 Edens	Oakton St	CO	187
S	S-2a	4095	G20	I 94 Edens	Lincoln Ave	CO	188
S	S-2a	4120	H26	I 94 Edens	Church St	CO	189
S	S-2a	4125	J25	I 94 Edens	Golf Rd	CO	190
S	S-2a	4130	K27	I 94 Edens	Old Orchard	CO	191
S	S-2a	4135	K28	I 94 Edens	Old Orchard	CO	192
S	S-2a	4140	K30	I 94 Edens	Glenview Ave	CO	193
S	S-2a	4145	L29	I 94 Edens	Lake Ave	CO	194
S	S-2a	4150	L32	I 94 Edens	Lake Ave	CO	195
S	S-2a	4155	L34	I 94 Edens	Lake Ave	CO	196
S	S-2a	4160	M31	I 94 Edens	US 41 Skokie Blvd	CO	197
S	S-2a	4165	M36	I 94 Edens	US 41 Skokie Blvd	CO	198
S	S-2a	4170	M33	I 94 Edens	Winnetka Rd	CO	199
S	S-2a	4180	N37	I 94 Edens	Willow Rd	CO	200
S	S-2a	4185	N38	I 94 Edens	Willow Rd	CO	201
S	S-2a	4190	N40	I 94 Edens	Willow Rd	CO	202
S	S-2a	4195	O42	I 94 Edens	Tower Rd (half mile south)	CO	203
S	S-2a	4200	O39	I 94 Edens	Tower Rd	CO	204
S	S-2a	4205	O44	I 94 Edens	Tower Rd	CO	205
S	S-2a	4210	P46	I 94 Edens	Tower Rd (half mile north)	CO	206
S	S-2a	4215	P48	I 94 Edens	IL 68 Dundee (half mile south)	CO	207
S	S-2a	4220	R41	I 94 Edens	IL 68 Dundee Rd	CO	208
S	S-2a	4225	R50	I 94 Edens	IL 68 Dundee Rd	CO	209
S	S-2a	4230	R52	I 94 Edens	IL 68 Dundee Rd	CO	210

S	S-2a	4235	R54	I 94 Edens	I 294 Tollway	CO	211
S	S-2a	4240	S56	I 94 Edens	Lake Cook Rd	CO	212
S	S-2b	5005	71	I 94 Ryan	97th St	CO	213
S	S-2b	5010	69	I 94 Ryan	97th St	CO	214
S	S-2b	5020	O67	I 94 Ryan SB	95th St Exit	CO	215
S	S-2b	5030	66	I 94 Ryan	87th St or 90th St Exit	CO	216
S	S-2b	5045	63	I 94 Ryan	87th St Ent	CO	217
S	S-2b	5060	61	I 94 Ryan	83rd St Exit	CO	218
S	S-2b	5065	60	I 94 Ryan	79th St Exit	CO	219
S	S-2b	5080	58A	I 94 Ryan	79th St Exit	CO	220
S	S-2b	5090	57A	I 94 Ryan	76th St CD Ent	CO	221
S	S-2b	5095	55	I 94 Ryan	75th St Exit	CO	222
S	S-2b	5100	54	I 94 Ryan	75th St Exit	CO	223
S	S-2b	5110	51	I 94 Ryan	75th St Exit	CO	224
S	S-2b	5122	50	I 94 Ryan NB	67th St Exit	CO	225
S	S-2b	5135	47	I 94 Ryan SB	65th St Skyway Exit	CO	226
S	S-2b	5140	48	I 94 Ryan NB	65th St Skyway Ent	CO	227
S	S-2b	5150	45A	I 90 94 Ryan SB	63rd St Exit	CO	228
S	S-2b	5155	46A	I 90 94 Ryan NB	59th St Exit	CO	229
S	S-2b	5165	43	I 90 94 Ryan SB	59th St	CO	230
S	S-2b	5170	44	I 90 94 Ryan NB	59th St	CO	231
S	S-2b	5220	39	I 90 94 Ryan SB	53rd St	CO	232
S	S-2b	5230	40	I 90 94 Ryan	47th St Exit	CO	233
S	S-2b	5240	35	I 90 94 Ryan	47th St Exit	CO	234
S	S-2b	5245	38A	I 90 94 Ryan	43rd St Exit	CO	235
S	S-2b	5260	33	I 90 94 Ryan	43rd St Exit	CO	236
S	S-2b	5265	34	I 90 94 Ryan	39th St Exit	CO	237
S	S-2b	5295	32	I 90 94 Ryan NB	39th St Exit	CO	238
S	S-2b	5300	29	I 90 94 Ryan SB	35th St	CO	239
S	S-2b	5305	30	I 90 94 Ryan NB	35th St	CO	240
S	S-2b	5310	27	I 90 94 Ryan SB	35th St	CO	241
S	S-2b	5315	25	I 90 94 Ryan SB	33rd St	CO	242
S	S-2b	5320	28	I 90 94 Ryan NB	33rd St	CO	243
S	S-2b	5325	23	I 90 94 Ryan SB	31st St	CO	244
S	S-2b	5330	26	I 90 94 Ryan NB	31st St	CO	245

S	S-2a	5335	X20	I 90 94 Ryan	29th St	CO	246
S	S-2a	5340	X21	I 90 94 Ryan	29th St	CO	247
S	S-2a	5345	X22	I 90 94 Ryan	29th St	CO	248
S	S-2a	5350	X24	I 90 94 Ryan	29th St	CO	249
S	S-2a	5355	X19	I 90 94 Ryan	26th St & Princeton Ave	CO	250
S	S-2a	5360	Z12	I 90 94 Ryan	Ford Ave	CO	251
S	S-2a	5365	Z14	I 90 94 Ryan	Ford Ave	CO	252
S	S-2a	5370	Z10	I 90 94 Ryan	22nd St & Emerald Ave	CO	253
S	S-2a	5375	Z13	I 90 94 Ryan	22nd St & Emerald Ave	CO	254
S	S-2a	5380	A11	I 90 94 Ryan	16th St & Union Ave	CO	255
S	S-2a	5395	C8	I 90 94 Ryan	Roosevelt Rd	CO	256
S	S-2a	5410	D1	I 90 94 Ryan	Polk St	CO	257
S	S-2a	6000	7	I 94 Ford EB	I 94 I 80 Interchange (east)	CO	258
S	S-2a	6005	6	I 94 Ford WB	I 94 I 80 Interchange (east)	CO	259
S	S-2a	6010	8	I 94 Ford EB	Torrence Slip to I 80 WB	CO	260
S	S-2a	6015	12	I 94 Ford WB	I 94 I 80 Interchange (east)	CO	261
S	S-2b	6035	C40	I 94 Ford	171st St	CO	262
S	S-2b	6040	E38	I 94 Ford WB	163rd St	CO	263
S	S-2a	6045	F32	I 94 Ford	US 6 159th St	CO	264
S	S-2a	6050	F34	I 94 Ford	US 6 159th St	CO	265
S	S-2a	6055	F36	I 94 Ford	US 6 159th St	CO	266
S	S-2a	6060	F47	I 94 Ford	US 6 159th St	CO	267
S	S-2a	6065	F49	I 94 Ford	US 6 159th St	CO	268
S	S-2a	6070	F45	I 94 Ford	Penn Central RR	CO	269
S	S-2a	6075	F43	I 94 Ford	Pulaski Rd	CO	270
S	S-2a	6080	G28	I 94 Ford	IL 83 147th St Sibley Blvd	CO	271
S	S-2a	6085	G30	I 94 Ford	IL 83 147th St Sibley Blvd	CO	272
S	S-2a	6090	G37	I 94 Ford	IL 83 147th St Sibley Blvd	CO	273
S	S-2a	6095	G39	I 94 Ford	IL 83 147th St Sibley Blvd	CO	274
S	S-2a	6100	G41	I 94 Ford	IL 83 147th St Sibley Blvd	CO	275
S	S-2a	6105	H24	I 94 Ford	Dolton St	CO	276
S	S-2a	6110	H26	I 94 Ford	Dolton St	CO	277
S	S-2a	6120	H35	I 94 Ford	Dolton St	CO	278
S	S-2a	6125	H31	I 94 Ford	B & O RR (north)	CO	279
S	S-2a	6130	X22	I 94 Ford	138th St	CO	280
S	S-2a	6135	X29	I 94 Ford	138th St	CO	281
S	S-2a	6140	X20	I 94 Ford	133rd St	CO	282
S	S-2a	6145	I16	I 94 Ford	130th St	CO	283

S	S-2a	6150	I18	I 94 Ford	130th St	CO	284
S	S-2a	6155	I25	I 94 Ford	130th St	CO	285
S	S-2a	6160	I27	I 94 Ford	130th St	CO	286
S	S-2a	6165	J23	I 94 Ford	128th St	CO	287
S	S-2a	6170	J21	I 94 Ford	124th St	CO	288
S	S-2a	6175	J19	I 94 Ford	125th St	CO	289
S	S-2a	6180	H12	I 94 Ford	115th St	CO	290
S	S-2a	6185	H14	I 94 Ford	115th St	CO	291
S	S-2a	6190	H15	I 94 Ford	115th St	CO	292
S	S-2a	6195	J17	I 94 Ford	115th St	CO	293
S	S-2a	6200	K8	I 94 Ford	111th St	CO	294
S	S-2a	6205	K10	I 94 Ford	111th St	CO	295
S	S-2a	6210	K11	I 94 Ford	111th St	CO	296
S	S-2a	6215	K13	I 94 Ford	111th St	CO	297
S	S-2a	6245	M3	I 94 Ford	Rhodes St	CO	298
S	S-2b	6250	M1	I 94 Ford	Michigan Ave	CO	299
S	S-2b	7000	2	I 80 WB	Indiana State Line	CO	300
S	S-2b	7005	1	I 80 EB	Wentworth (west)	CO	301
S	S-2b	7010	3	I 80 EB	Burnham (west)	CO	302
S	S-2b	7015	5	I 80 EB	Railroad Ave (west)	CO	303
S	S-2b	7020	4	I 80 WB	Torrence Ave	CO	304
S	S-2b	7025	9	I 80 EB	I 80 I 94 IL 394	CO	305
S	S-2b	7030	10	I 80 WB	I 80 I 94 IL 394	CO	306
S	S-2a	8000	B2	I 290 IKE	Franklin St	CO	307
S	S-2a	8015	G3	I 290 IKE	Racine Ave	CO	308
S	S-2a	8025	G5	I 290 IKE	Racine Ave	CO	309
S	S-2a	8030	G6	I 290 IKE	Racine Ave	CO	310
S	S-2a	8035	G7	I 290 IKE	Ashland Ave	CO	311
S	S-2a	8045	G9	I 290 IKE	Damen Ave & Paulina	CO	312
S	S-2a	8050	G10	I 290 IKE	Damen Ave & Paulina	CO	313
S	S-2a	8055	H11	I 290 IKE	Damen Ave & Paulina	CO	314
S	S-2a	8065	H12	I 290 IKE	Damen Ave & Paulina	CO	315
S	S-2a	8070	H12A	I 290 IKE	Damen Ave & Paulina	CO	316
S	S-2a	8075	H13	I 290 IKE	Oakley Ave	CO	317
S	S-2a	8080	H14	I 290 IKE	Oakley Ave	CO	318
S	S-2a	8090	H17	I 290 IKE	Western Ave	CO	319
S	S-2a	8100	I18	I 290 IKE	Sacremento Blvd	CO	320
S	S-2a	8115	I23	I 290 IKE	Homan Ave	CO	321
S	S-2a	8125	J24	I 290 IKE	Independence Blvd	CO	322
S	S-2a	8130	J25	I 290 IKE	Independence Blvd	CO	323
S	S-2a	8145	J29	I 290 IKE	Kostner Ave	CO	324
S	S-2a	8150	K28	I 290 IKE	IL 50 Cicero Ave	CO	325

S	S-2a	8155	K31	I 290 IKE	IL 50 Cicero Ave	CO	326
S	S-2a	8170	K35	I 290 IKE	Laramie Ave	CO	327
S	S-2a	8180	L34	I 290 IKE	Central Ave	CO	328
S	S-2a	8185	L34S	I 290 IKE	Central Ave	CO	329
S	S-2a	8190	L37	I 290 IKE	Central Ave	CO	330
S	S-2a	8200	L36	I 290 IKE	Austin Blvd	CO	331
S	S-2a	8205	M41	I 290 IKE	Austin Blvd	CO	332
S	S-2a	8215	M38	I 290 IKE	East Ave	CO	333
S	S-2a	8220	M45	I 290 IKE	East Ave	CO	334
S	S-2k	8225	MCD1	I 290 IKE	East Ave	CO	335
S	S-2a	8235	M47	I 290 IKE	IL 43 Harlem Ave	CO	336
S	S-2a	8245	N42	I 290 IKE	Des Plaines Ave	CO	337
S	S-2a	8250	N51	I 290 IKE	Des Plaines Ave	CO	338
S	S-2a	8260	O44	I 290 IKE	Des Plaines River	CO	339
S	S-2a	8270	O55	I 290 IKE	IL 171 1st Ave	CO	340
S	S-2a	8275	O57	I 290 IKE	IL 171 1st Ave	CO	341
S	S-2a	8290	P61	I 290 IKE	9th Ave	CO	342
S	S-2a	8300	P56	I 290 IKE	17th Ave	CO	343
S	S-2a	8305	P63	I 290 IKE	17th Ave	CO	344
S	S-2a	8325	R67	I 290 IKE	25th Ave	CO	345
S	S-2a	8335	R62	I 290 IKE	Addison Creek	CO	346
S	S-2a	8360	S71	I 290 IKE	Mannheim Rd	CO	347
S	S-2a	8380	T77	I 290 IKE	Hillside Ave Wolf Rd Exit	CO	348
S	S-2a	9000	V72	I 290 IKE	Wolf Rd	CO	349
S	S-2k	9005	MCD3	I 290 IKE	Wolf Rd	CO	350
S	S-2a	9010	V74	I 290	Butterfield Rd	CO	351
S	S-2a	9015	V76	I 290	I 294 Tollway	CO	352
S	S-2a	9020	V81	I 290	I 294 Tollway	CO	353
S	S-2a	9025	W78	I 290	Maple Ave	CO	354
S	S-2a	9230	L123	I 290 IL 53 OB	Devon Ave (north)	CO	355
S	S-2a	9235	L122	I 290 IL 53 IB	Biesterfield Rd	CO	356
S	S-2a	9240	L123A	I 290 IL 53 OB Ent	Biesterfield Rd	CO	357
S	S-2a	9245	M124	I 290 IL 53 IB	Biesterfield Rd (north)	CO	358
S	S-2a	9250	M126	I 290 IL 53 IB	WGN Radio Station Tower	CO	359
S	S-2a	9255	M128	I 290 IL 53 IB	IL 72 Higgins Rd (one & one half mile south)	CO	360
S	S-2a	9260	N130	I 290 IL 53 IB	IL 72 Higgins Rd (one mile south)	CO	361
S	S-2a	9270	O127	I 290 IL 53 OB	IL 72 Higgins Rd	CO	362
S	S-2a	9275	O132	I 290 IL 53	IL 72 Higgins Rd	CO	363

				IB			
S	S-2a	9285	P129	I 290 IL 53 OB	Woodfield Dr	CO	364
S	S-2a	9295	P131	I 290 IL 53	I 90 Tollway	CO	365
S	S-2a	9300	P138	I 290 IL 53	I 90 Tollway	CO	366
S	S-2a	10000	133	IL 53	I 90 Tollway IB	CO	367
S	S-2a	10003	140	IL 53	I 90 Tollway OB	CO	368
S	S-2a	10005	135	IL 53	IL 62 Algonquin Rd	CO	369
S	S-2a	10010	142	IL 53	IL 62 Algonquin Rd	CO	370
S	S-2a	10015	144	IL 53	Algonquin Rd (half mile north)	CO	371
S	S-2a	10020	146	IL 53	Kirchoff Rd	CO	372
S	S-2a	10025	137	IL 53	Kirchoff Rd	CO	373
S	S-2a	10030	143	IL 53	Industrial Ave	CO	374
S	S-2a	10035	139	IL 53	Euclid St	CO	375
S	S-2a	10040	148	IL 53	Euclid St	CO	376
S	S-2a	10045	150	IL 53	Euclid St	CO	377
S	S-2a	10047	141	IL 53	Euclid St	CO	378
S	S-2a	10050	145	IL 53	US 14 Northwest Hwy	CO	379
S	S-2a	10055	152	IL 53	US 14 Northwest Hwy	CO	380
S	S-2a	10060	147	IL 53	Palatine Rd	CO	381
S	S-2a	10065	149	IL 53	Palatine Rd	CO	382
S	S-2a	10070	154	IL 53	Palatine Rd	CO	383
S	S-2a	10075	156	IL 53	Palatine Rd	CO	384
S	S-2a	10080	151	IL 53	Anderson Dr	CO	385
S	S-2a	10085	153	IL 53	US 12 Rand Rd	CO	386
S	S-2a	10090	158	IL 53	US 12 Rand Rd	CO	387
S	S-2a	10095	155	IL 53	IL 68 Dundee Rd	CO	388
S	S-2a	10100	157	IL 53	IL 68 Dundee Rd	CO	389
S	S-2a	10105	160	IL 53	IL 68 Dundee Rd	CO	390
S	S-2a	10110	162	IL 53	IL 68 Dundee Rd	CO	391
S	S-2a	10115	159	IL 53	Lake Cook Rd (half mile south)	CO	392
S	S-2a	12000	1	Lake Shore Dr	Marquette Rd (south)	CO	393
S	S-2a	12005	2	Lake Shore Dr	Marquette Rd (south)	CO	394
S	S-2a	12010	3	Lake Shore Dr	Hayes Dr	CO	395
S	S-2a	12015	4	Lake Shore Dr	59th St (south)	CO	396
S	S-2a	12020	5	Lake Shore Dr	59th St (south)	CO	397
S	S-2a	12025	6	Lake Shore Dr	53rd St (south)	CO	398
S	S-2a	12030	7	Lake Shore Dr	48th St (south)	CO	399
S	S-2a	12035	8	Lake Shore Dr	47th St (south)	CO	400
S	S-2a	12040	9	Lake Shore Dr	47th St (south)	CO	401
S	S-2a	12045	10	Lake Shore Dr	43rd St (south)	CO	402
S	S-2a	12050	11	Lake Shore Dr	Oakwood Blvd (south)	CO	403

S	S-2a	12055	12	Lake Shore Dr	Oakwood Blvd (south)	CO	404
S	S-2a	12060	13	Lake Shore Dr	Oakwood Blvd (north)	CO	405
S	S-2a	12065	14	Lake Shore Dr	35th St (south)	CO	406
S	S-2a	12070	15	Lake Shore Dr	31st St (south)	CO	407
S	S-2a	12075	16	Lake Shore Dr	31st St (north)	CO	408
S	S-2a	12090	19	Lake Shore Dr	25th St	CO	409
S	S-2a	12100	21	Lake Shore Dr	23rd St (north)	CO	410
S	S-2k	12105	MCD7	Lake Shore Dr	23rd St (north)	CO	411
S	S-2a	12106	22	Lake Shore Dr	18th St	CO	412
S	S-2a	12107	21A	Lake Shore Dr OB	18th St	CO	413
S	S-2a	12110	23	Lake Shore Dr	McFetridge Dr (south)	CO	414
S	S-2a	12115	24	Lake Shore Dr	Balbo Ave (south)	CO	415
S	S-2a	12120	25	Lake Shore Dr	Jackson Blvd	CO	416
S	S-2a	13025	26	Lake Shore Dr	Randolph St	CO	417
S	S-2a	13030	27	Lake Shore Dr	Randolph St	CO	418
S	S-2a	13035	28	Lake Shore Dr	Randolph St	CO	419
S	S-2a	13040	29	Lake Shore Dr	Randolph St	CO	420
S	S-2a	13045	30	Lake Shore Dr	Wacker Dr	CO	421
S	S-2a	13055	32	Lake Shore Dr	Grand Ave	CO	422
S	S-2a	13060	33	Lake Shore Dr	Wacker Dr	CO	423
S	S-2a	13065	34	Lake Shore Dr	Erie St	CO	424
S	S-2a	13070	35	Lake Shore Dr	Chicago Ave (south)	CO	425
S	S-2a	13075	36	Lake Shore Dr	Chicago Ave	CO	426
S	S-2a	13080	37	Lake Shore Dr	Chicago Ave	CO	427
S	S-2a	13085	38	Lake Shore Dr	Chestnut St	CO	428
S	S-2a	13090	39	Lake Shore Dr	Chestnut St	CO	429
S	S-2a	13095	40	Lake Shore Dr	Michigan Ave	CO	430
S	S-2a	13100	41	Lake Shore Dr	Michigan Ave	CO	431
S	S-2a	13105	42	Lake Shore Dr	Michigan Ave	CO	432
S	S-2a	13110	43	Lake Shore Dr	Division St	CO	433
S	S-2a	13115	44	Lake Shore Dr	Division St	CO	434
S	S-2a	13120	45	Lake Shore Dr	Division St	CO	435
S	S-2a	13125	46	Lake Shore Dr	North Ave	CO	436
S	S-2a	13130	47	Lake Shore Dr	North Ave	CO	437
S	S-2a	13135	48	Lake Shore Dr	North Ave	CO	438
S	S-2a	13140	49	Lake Shore Dr	North Ave	CO	439
S	S-2a	13145	50	Lake Shore Dr	North Ave	CO	440
S	S-2a	13150	51	Lake Shore Dr	Armitage Ave	CO	441
S	S-2a	13155	52	Lake Shore Dr	Fullerton Parkway	CO	442
S	S-2a	13160	53	Lake Shore Dr	Fullerton Parkway	CO	443
S	S-2a	13165	54	Lake Shore Dr	Fullerton Parkway	CO	444
S	S-2a	13170	55	Lake Shore Dr	Diversey Ave	CO	445

S	S-2a	13175	56	Lake Shore Dr	Diversey Ave	CO	446
S	S-2a	13180	57	Lake Shore Dr	Belmont Ave	CO	447
S	S-2a	13185	58	Lake Shore Dr	Belmont Ave	CO	448
S	S-2a	13190	59	Lake Shore Dr	Belmont Ave	CO	449
S	S-2a	13195	60	Lake Shore Dr	Belmont Ave	CO	450
S	S-2a	13200	61	Lake Shore Dr	Belmont Ave	CO	451
S	S-2a	13205	62	Lake Shore Dr	Addison St	CO	452
S	S-2a	13210	63	Lake Shore Dr	Addison St	CO	453
S	S-2a	13215	64	Lake Shore Dr	IL 19 Irving Park Rd	CO	454
S	S-2a	13220	65	Lake Shore Dr	IL 19 Irving Park Rd	CO	455
S	S-2a	13225	66	Lake Shore Dr	IL 19 Irving Park Rd	CO	456
S	S-2a	13230	67	Lake Shore Dr	IL 19 Irving Park Rd	CO	457
S	S-2a	13235	68	Lake Shore Dr	Montrose Ave	CO	458
S	S-2a	13240	69	Lake Shore Dr	Montrose Ave	CO	459
S	S-2a	13245	70	Lake Shore Dr	Wilson Ave	CO	460
S	S-2a	13250	71	Lake Shore Dr	Wilson Ave	CO	461
S	S-2a	13255	72	Lake Shore Dr	Wilson Ave	CO	462
S	S-2a	13260	73	Lake Shore Dr	Lawrence Ave	CO	463
S	S-2a	13265	74	Lake Shore Dr	Lawrence Ave	CO	464
S	S-2a	13270	75	Lake Shore Dr	Lawrence Ave	CO	465
S	S-2a	13275	76	Lake Shore Dr	Foster Ave	CO	466
S	S-2a	13280	77	Lake Shore Dr	Foster Ave	CO	467
S	S-2a	13285	78	Lake Shore Dr	Foster Ave	CO	468
S	S-2a	13290	79	Lake Shore Dr	Bryn Mawr Ave	CO	469
S	S-2a	13295	80	Lake Shore Dr	Bryn Mawr Ave	CO	470
S	S-2a	13297	81	Lake Shore Dr	Bryn Mawr Ave	CO	471
S	S-2a	15000	2	I 80	I 294 Tollway	CO	472
S	S-2a	15005	4E	I 80	Kedzie Ave	CO	473
S	S-2a	15010	1	I 80	Kedzie Ave (half mile west)	CO	474
S	S-2a	15015	6E	I 80	Crawford Ave	CO	475
S	S-2a	15020	8E	I 80	IL 50 Cicero Ave (half mile east)	CO	476
S	S-2a	15025	10	I 80	IL 50 Cicero Ave	CO	477
S	S-2a	15030	3	I 80	I 57 (east)	CO	478
S	S-2a	15035	5	I 80	I 57 (west)	CO	479
S	S-2a	15040	7	I 80	Central Ave	CO	480
S	S-2a	15045	12	I 80	183rd St	CO	481
S	S-2a	15050	14	I 80	Ridgeland Ave	CO	482
S	S-2a	15055	9	I 80	Oak Park Ave	CO	483
S	S-2a	15060	16	I 80	IL 43 Harlem Ave (east)	CO	484
S	S-2k	15067	MCD1	I 80	Harlem Ave	CO	485
S	S-2b	16000	11	IL 394 SB	I 80 94 SW Quad IL 39	CO	486

S	S-2b	16005	14	IL 394 nB	I 80 94 SE Quad IL 39	CO	487
S	S-2b	16010	16	IL 394 nB	Thorton Lansing Rd (south)	CO	488
S	S-2f	16020	18	IL 394 NB	186th St	CO	489
S	S-2i	20005	1050	IL 59 Sutton Rd	US 20 Lake St	CO	490
S	S-2i	20010	1121	I 90 JFK 94	51st St	CO	491
S	S-2i	20015	1123	I 90 JFK 94	51st St	CO	492
S	S-2i	20020	1170	US 6 159th St	Pulaski Rd Crawford Ave	CO	493
S	S-2i	20070	1280	IL 43 Harlem Ave	Techny Rd	CO	494
S	S-2i	20075	1290	IL 68 Dundee Rd	Portwine Rd	CO	495
S	S-2i	20085	1260	IL 58 Golf Rd	Birch Ave	CO	496
S	S-2i	20090	1200	IL 50 Cicero Ave	99th St (south)	CO	497
S	S-2i	20110	1190	IL 7 SW Highway	131st St	CO	498
S	S-2i	20115	1270	US 14 Northwest Hwy	Chatham Pl (west)	CO	499
S	S-2i	20120	1230	Devon Ave	Arlington Heights Rd (east)	CO	500
S	S-2i	20160	1250	Kedzie Ave	Touhy Ave (south)	CO	501
S	S-2i	20165	1240	IL 72 Higgins	I 294 Tollway (east)	CO	502
S	S-2i	20205	1180	IL 83 147th St Sibley Blvd	Minerva Ave (west)	CO	503
S	S-2i	20210	1210	Cossitt Ave	Sunset Ave (east)	CO	504
S	S-2i	20215	1220	US 12 45 Mannheim Rd	Roadway Shipping Terminal Ent	CO	505
S	S-2i	22000	1110	I 90 JFK	Nagle Ave	CO	506
S	S-2i	22025	1177	I 80	Kedzie Speed	CO	507
S	S-2k	22450	S2K	I 190	Mannheim Rd SB	CO	508

Sys.	**Type**	**Loc. #**	**Cab.**	**Main Route**	**Cross Street**	**Co.**	**Qty**
S	S-3f	1007	DMS-7	I 55 Stev OB	Martin Luther King Dr	CO	1
S	S-3f	1112	DMS-5	I 55 Stev Median	Kedzie Ave (west)	CO	2
S	S-3a	1262	DMS-23	I 55 Stev IB	1st Ave (west)	CO	3
S	S-3j	1282	DMS-104	US 12 20 45 LaGrange NB	87th St	CO	4
S	S-3j	1283	DMS-105	US 12 20 45 LaGrange SB	I 55 (north)	CO	5
S	S-3e	2052	DMS-29	I 57 IB	119th St	CO	6
S	S-3e	2265	DMS-28	I 57 IB	I 80 183rd St (south)	CO	7
S	S-3a	3096	DMS-19	I 90 JFK IB	Canfield Ave	CO	8

S	S-3f	3176	DMS-18	I 90 JFK IB	Foster Ave	CO	9
S	S-3f	3281	DMS-17	I 90 94 JFK IB	Pulaski Rd	CO	10
S	S-3a	3331	DMS-16	I 90 94 JFK Reversible IB	Kimball Ave	CO	11
S	S-3a	3416	DMS-14	I 90 94 JFK Reversible IB	Webster Ave	CO	12
S	S-3f	3417	DMS-15	I 90 94 JFK OB	Damen Ave	CO	13
S	S-3f	3482	DMS-13	I 90 94 JFK IB	Augusta Blvd	CO	14
S	S-3h	4072	DMS-106	Touhy Ave WB OB	I 94 (east)	CO	15
S	S-3h	4073	DMS-107	Touhy Ave EB IB	I 94 (west)	CO	16
S	S-3a	4086	DMS-21	I 94 Edens IB	Niles Center Rd	CO	17
S	S-3a	4206	DMS-22	I 94 Edens IB	Tower Rd	CO	18
S	S-3b	5052	DMS-30	I 94 Ryan SB	83rd St	CO	19
S	S-3b	5053	DMS-02	I 94 Ryan NB	83rd St	CO	20
S	S-3b	5186	DMS-3L	I 90 94 Ryan NB	57th St Locals	CO	21
S	S-3b	5188	DMS-3E	I 90 94 Ryan NB	57th St	CO	22
S	S-3b	5196	DMA31L	I 90 94 Ryan SB	55th St Locals	CO	23
S	S-3b	5197	DMS-31E	I 90 94 Ryan SB	55th St	CO	24
S	S-3b	5292	DMS-32L	I 90 94 Ryan SB	39th St Locals	CO	25
S	S-3b	5293	DMS-32E	I 90 94 Ryan SB	39th St	CO	26
S	S-3b	5296	DMS-4L	I 90 94 Ryan NB	37th St Locals	CO	27
S	S-3b	5298	DMS-4E	I 90 94 Ryan NB	37th St	CO	28
S	S-3b	5377	DMS-8	I 90 94 Ryan	S Branch of Chicago River	CO	29
S	S-3f	5406	DMS-9	I 90 94 Ryan	Taylor St	CO	30
S	S-3f	5407	DMS-10	I 90 94 Ryan Median	Taylor St	CO	31
S	S-3b	6103	DMS-26	I 94 Ford IB	145th St	CO	32
S	S-3d	6104	DMS-25	I 94 Ford OB	145th St	CO	33
S	S-3b	6177	DMS-20	I 94 Ford SB	119th St	CO	34
S	S-3b	6178	DMS-06	I 94 Ford NB	124th St	CO	35
S	S-3c	7001	DMS-1	I 80 WB	State Line	CO	36
S	S-3f	8002	DMS-12	I 290 IKE IB	Old Post Office (east)	CO	37
S	S-3f	8072	DMS-11	I 290 IKE IB	Damen Ave	CO	38
S	S-3e	10029	DMS-36	IL 53 I 290 Exit	Industrial Ave	CO	39
S	S-3d	16015	DMS-27	IL 394 NB	186th St	CO	40
S	S-3h	22050	DMS-101	Grand Ave EB	77th Ave	CO	41

				IB			
S	S-3j	22150	DMS-108	Stoney Island Ave SB OB	98th Pl	CO	42
S	S-3j	22200	DMS-109	US 6 159th St EB IB	Crawford Ave (west)	CO	43
S	S-3h	22250	DMS-110	US 6 159th St WB OB	Dixie Hwy (west)	CO	44
S	S-3h	22350	DMS-113	US 45 Mannheim Rd NB	I 290 (south)	CO	45
S	S-3h	22400	DMS-114	US 45 Mannheim Rd SB	I 290 (north)	CO	46

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-1a	9030	W80	I 290	St Charles Rd	DU	1
S	S-1a	9035	W82	I 290	St Charles Rd	DU	2
S	S-1a	9040	W83	I 290	St Charles Rd	DU	3
S	S-1a	9045	W85	I 290	St Charles Rd	DU	4
S	S-1a	9055	X86	I 290	IL 64 North Ave	DU	5
S	S-1a	9075	X90	I 290	IL 64 North Ave	DU	6
S	S-1a	9130	A101	I 290 WB	IL 83 Kingery Hwy	DU	7
S	S-1a	9140	A103	I 290	IL 83 Kingery Hwy	DU	8

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-2a	1335	61	I 55 Stev	County Line (one mile west)	DU	1
S	S-2a	1340	63	I 55 Stev	Madison St	DU	2
S	S-2a	1345	58	I 55 Stev	IL 83 (east)	DU	3
S	S-2a	1350	60	I 55 Stev	IL 83 (west)	DU	4
S	S-2a	1355	65	I 55 Stev	Clarendon Hills Rd	DU	5
S	S-2a	1360	62	I 55 Stev	Clarendon Hills Rd (half mile west)	DU	6
S	S-2a	1365	64	I 55 Stev	Cass Ave (east)	DU	7
S	S-2a	1370	66	I 55 Stev	Cass Ave (west)	DU	8
S	S-2a	1375	68	I 55 Stev	Cass Ave (one mile west)	DU	9
S	S-2a	1380	67	I 55 Stev	Lemont Rd (half mile east)	DU	10
S	S-2a	1385	70	I 55 Stev	Lemont Rd (east)	DU	11
S	S-2a	1390	72	I 55 Stev	Lemont Rd (west)	DU	12
S	S-2a	1395	74	I 55 Stev	Lemont Rd (half mile west)	DU	13
S	S-2a	1400	76	I 55 Stev	Woodward Ave	DU	14
S	S-2a	9050	X84	I 290	Cn RR C & NW RR	DU	15
S	S-2a	9060	X87	I 290	IL 64 North Ave	DU	16
S	S-2a	9065	X88	I 290	IL 64 North Ave	DU	17

S	S-2a	9070	X89	I 290	IL 64 North Ave	DU	18
S	S-2a	9080	X91	I 290	IL 64 North Ave	DU	19
S	S-2a	9085	X92	I 290	Emroy Ave	DU	20
S	S-2a	9090	Y93	I 290	York Rd & Lake St	DU	21
S	S-2a	9095	Y94	I 290	York Rd & Lake St	DU	22
S	S-2a	9100	Y95	I 290 WB	York Rd & Lake St	DU	23
S	S-2a	9105	Y96	I 290 IKE EB	York Rd & Lake St	DU	24
S	S-2a	9110	Y97	I 290 WB	York Rd & Lake St	DU	25
S	S-2a	9115	Y99	I 290 WB	Church Rd	DU	26
S	S-2a	9120	Y98	I 290 EB	Grand Ave	DU	27
S	S-2a	9125	A100	I 290 EB	IL 83 Kingery Hwy	DU	28
S	S-2a	9135	A102	I 290	IL 83 Kingery Hwy	DU	29
S	S-2a	9145	B105	I 290	Wooddale Rd	DU	30
S	S-2a	9150	E107	I 290	Wooddale Rd (west)	DU	31
S	S-2a	9155	E109	I 290	Addison Rd	DU	32
S	S-2a	9160	E104	I 290	Addison Rd (west)	DU	33
S	S-2a	9165	F111	I 290	Mill Rd	DU	34
S	S-2a	9170	G106	I 290 IL 53	Itasca Rd	DU	35
S	S-2a	9175	G110	I 290 IL 53	Nordic Rd	DU	36
S	S-2a	9180	J112	I 290 IL 53	Nordic Rd	DU	37
S	S-2a	9190	J114	I 290 IL 53	IL 19 Irving Park Rd (north)	DU	38
S	S-2a	9225	L121	I 290 IL 53 OB	Devon Ave	DU	39
S	S-2a	11000	G108	I 355	Schick Rd	DU	40
S	S-2a	11005	I1	I 355	US 20 Lake St	DU	41
S	S-2a	11010	I2	I 355	US 20 Lake St	DU	42
S	S-2a	11015	I4	I 355	US 20 Lake St	DU	43
S	S-2a	11020	I6	I 355	Kings Point Dr	DU	44
S	S-2i	20025	1310	I 355	75th	DU	45
S	S-2i	20030	1320	IL 64 North Ave	IL 59 Sutton Rd	DU	46
S	S-2i	20060	1330	IL 38 Roosevelt Rd	Finley Rd (west)	DU	47
S	S-2i	20095	1340	IL 83 Kingery Hwy	55th St (north)	DU	48
S	S-2i	20125	1350	Wooddale Ave	Mark St (south)	DU	49
S	S-2i	20220	1995	IL 59	75th St (south)	DU	50
S	S-2i	22015	1140	I 290	IL 83 Kingery Hwy	DU	51
S	S-2i	22020	1176	I 55 Stev	Cass Ave	DU	52

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-3a	1332	DMS-24	I 55 Stev IB	County Line Rd (west)	DU	1
S	S-3j	9132	DMS-102	IL 83 Kingery NB	I 290	DU	2

S	S-3j	9133	DMS-103	IL 83 Kingery SB	I 290	DU	3
S	S-3e	9252	DMS-35	I 290 IB	Biesterfield Rd (north)	DU	4

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-2i	20035	1420	IL 31 Lincoln Way	IL 56 State St	KA	1
S	S-2i	20080	1430	Peplow Rd	Ramm Rd (north)	KA	2
S	S-2i	20130	1440	Galligan Rd	Freeman Rd (south)	KA	3
S	S-2i	20155	1450	Campton Hills Rd	Lynn Dr (east)	KA	4

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-2a	4245	S58	US 41 Skokie Hwy	Lake Cook Rd	LA	1
S	S-2a	4250	T60	US 41 Skokie Hwy	Lake Cook Rd (half mile north)	LA	2
S	S-2a	4255	T45	US 41 Skokie Hwy	Bob O Link Golf Club	LA	3
S	S-2a	4260	T62	US 41 Skokie Hwy	Chantilly Blvd	LA	4
S	S-2a	4265	T43	US 41 Skokie Hwy	Clavey Rd	LA	5
S	S-2i	20000	1040	US 12 IL 59	IL 134 Long Lake Big Hollow Rd	LA	6
S	S-2i	20040	1500	US 45	IL 176	LA	7
S	S-2i	20045	1520	IL 22 Half Day Rd	IL 83	LA	8
S	S-2i	20065	1530	IL 131 Green Bay Rd	20th St (south)	LA	9
S	S-2i	20100	1540	IL 59	Hillcrest Dr (south)	LA	10
S	S-2i	20135	1550	Wilson Ave	Marshall Blvd (north)	LA	11
S	S-2i	20140	1560	IL 176 Park Ave	Blue Spruce Ln (east)	LA	12
S	S-2i	20170	1570	Lake St	West St (west)	LA	13

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-3j	22100	DMS-111	US 41 Skokie Hwy OB	West Park Ave (south)	LA	1
S	S-3i	22300	DMS-112	US 41 Skokie Hwy OB	IL 22 Half Day Rd (south)	LA	2

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty
S	S-2i	20050	1610	IL 31	US 14 Northwest Hwy	MC	1
S	S-2i	20150	1620	US 14	Deep Cut Rd (SE)	MC	2

Sys.	Type	Loc. #	Cab.	Main Route	Cross Street	Co.	Qty

S	S-2f	1401	RVD9	I 55	I 355 Tollway	WI	1
S	S-2f	1402	RVD6	I 55	I 355 Tollway	WI	2
S	S-2f	1403	RVD5	I 55	I 355 Tollway	WI	3
S	S-2f	1404	RVD7	I 55	I 355 Tollway	WI	4
S	S-2f	1405	RVD8	I 55	I 355 Tollway	WI	5
S	S-2f	1406	RVD4	I 55	I 355 Tollway	WI	6
S	S-2f	1407	RVD2	I 55	I 355 Tollway	WI	7
S	S-2f	1408	RVD3	I 55	I 355 Tollway	WI	8
S	S-2a	1425	69	I 55	Joliet Rd	WI	9
S	S-2f	1427	RVD1	I 55	I 355 Tollway Ent	WI	10
S	S-2a	1430	71	I 55	Joliet Rd (half mile west)	WI	11
S	S-2a	1435	82	I 55	Upton Rd (west)	WI	12
S	S-2a	1440	73	I 55	IL 53 (half mile east)	WI	13
S	S-2a	1445	84	I 55	IL 53 (east)	WI	14
S	S-2a	1450	86	I 55	IL 53 (west)	WI	15
S	S-2a	1455	88	I 55	Schmidt Rd (east)	WI	16
S	S-2a	1460	75	I 55	Schmidt Rd (west)	WI	17
S	S-2a	1465	90	I 55	Naperville Rd (half mile east)	WI	18
S	S-2a	1470	92	I 55	Naperville Rd (west)	WI	19
S	S-2g	1475	77	I 55	Weber Rd (half mile north)	WI	20
S	S-2g	1480	79	I 55	Weber Rd Exit	WI	21
S	S-2g	1485	81	I 55	Weber Rd (north)	WI	22
S	S-2g	1490	83	I 55	Weber Rd (south)	WI	23
S	S-2g	1495	85	I 55	Weber Rd (half mile south)	WI	24
S	S-2g	1500	87	I 55	Weber Rd (one mile north)	WI	25
S	S-2g	1505	94	I 55	Weber Rd (half mile north)	WI	26
S	S-2g	1510	89	I 55	IL 126 Exit	WI	27
S	S-2g	1515	91	I 55	IL 126	WI	28
S	S-2g	1520	96	I 55	IL 126 (quarter mile south)	WI	29
S	S-2b	1525	98	I 55	IL 126 (half mile south)	WI	30
S	S-2b	1530	93	I 55	Lockport Rd (half mile north)	WI	31
S	S-2b	1535	95	I 55	Lockport Rd (north)	WI	32
S	S-2b	1540	97	I 55	Lockport Rd (south)	WI	33
S	S-2b	1545	100	I 55	Renwick Rd (north)	WI	34
S	S-2b	1550	100A	I 55	US 30 (half mile north)	WI	35
S	S-2b	1555	101	I 55	US 30 (north)	WI	36
S	S-2b	1560	103	I 55	US 30 (south)	WI	37
S	S-2b	1565	105	I 55	US 30 (half mile south)	WI	38

S	S-2b	1572	107	I 55	Caton Farm Rd (half mile north)	WI	39
S	S-2b	1575	102	I 55	Caton Farm Rd	WI	40
S	S-2b	1580	104	I 55	Caton Farm (half mile south)	WI	41
S	S-2b	1585	109	I 55	US 52 (one mile north)	WI	42
S	S-2b	1590	106	I 55	US 52 (half mile north)	WI	43
S	S-2b	1595	108	I 55	Black Rd	WI	44
S	S-2b	1600	111	I 55	US 52 (half mile north)	WI	45
S	S-2b	1608	113	I 55	US 52 (north)	WI	46
S	S-2b	1610	115	I 55	US 52 (south)	WI	47
S	S-2b	1615	110	I 55	IL 59 (half mile north)	WI	48
S	S-2b	1620	117	I 55	IL 59 (north)	WI	49
S	S-2b	1625	119	I 55	IL 59 (south)	WI	50
S	S-2b	1630	121	I 55	I 80 (half mile north)	WI	51
S	S-2b	1635	123	I 55	I 80 (north)	WI	52
S	S-2b	1640	125	I 55	I 80 (south)	WI	53
S	S-2b	1645	127	I 55	I 80 (half mile south)	WI	54
S	S-2b	1650	129	I 55	I 80 (one mile south)	WI	55
S	S-2b	1655	131	I 55	Canal Rd	WI	56
S	S-2b	1660	133	I 55	US 6 (north)	WI	57
S	S-2b	1665	135	I 55	US 6 (south)	WI	58
S	S-2b	1670	137	I 55	Amoco Rd	WI	59
S	S-2b	1675	139	I 55	Bluff Rd (one mile north)	WI	60
S	S-2b	1680	141	I 55	Bluff Rd (half mile north)	WI	61
S	S-2b	1685	143	I 55	Bluff Rd (north)	WI	62
S	S-2b	1690	145	I 55	Bluff Rd (north)	WI	63
S	S-2b	1695	147	I 55	DesPlaines River (north)	WI	64
S	S-2b	1723	112	I 55	Blodgett Rd (quarter mile east)	WI	65
S	S-2g	1725	159	I 55	Blodgett Rd (half mile west)	WI	66
S	S-2g	1730	161	I 55	River Rd (one mile east)	WI	67
S	S-2g	1735	163	I 55	River Rd (half mile east)	WI	68
S	S-2b	1740	165	I 55	River Rd	WI	69
S	S-2b	1745	167	I 55	Lorenzo Rd (east)	WI	70
S	S-2b	1750	169	I 55	Lorenzo Rd (west)	WI	71
S	S-2b	1755	171	I 55	Lorenzo Rd (half mile west)	WI	72
S	S-2a	15065	18	I 80	IL 43 Harlem Ave (west)	WI	73
S	S-2a	15070	11	I 80	76th St	WI	74
S	S-2a	15075	20	I 80	80th Ave	WI	75
S	S-2a	15080	13	I 80	187th St	WI	76
S	S-2a	15085	15	I 80	Metra RR Bridge (east)	WI	77

S	S-2a	15090	17	I 80	Metra RR Bridge (west)	WI	78
S	S-2a	15095	22	I 80	US 45 LaGrange Rd (east)	WI	79
S	S-2a	15100	24	I 80	US 45 LaGrange Rd (west)	WI	80
S	S-2c	15105	25	I 80	LaGrange Rd (half mile west)	WI	81
S	S-2c	15110	27	I 80	LaGrange Rd (one mile west)	WI	82
S	S-2c	15115	29	I 80	Wolf Rd (half mile east)	WI	83
S	S-2c	15120	31	I 80	Wolf Rd (west)	WI	84
S	S-2c	15125	33	I 80	Wolf Rd (half mile west)	WI	85
S	S-2c	15130	35	I 80	Maple (half mile east)	WI	86
S	S-2c	15135	37	I 80	Maple Rd	WI	87
S	S-2c	15140	39	I 80	Norfolk Southern RR	WI	88
S	S-2c	15145	41	I 80	Parker Rd (east)	WI	89
S	S-2c	15150	43	I 80	Parker Rd (half mile west)	WI	90
S	S-2c	15155	45	I 80	I 355 East	WI	91
S	S-2c	15160	47	I 80	I 355	WI	92
S	S-2c	15165	49	I 80	I 355 West (Cedar Rd)	WI	93
S	S-2c	15170	51	I 80	I 355 (half mile west)	WI	94
S	S-2c	15175	53	I 80	Francis Rd (half mile east)	WI	95
S	S-2c	15180	55	I 80	Francis Rd	WI	96
S	S-2d	15185	57	I 80	US 30 (quarter mile east)	WI	97
S	S-2d	15205	61	I 80	Briggs (one mile east)	WI	98
S	S-2d	15215	63	I 80	Briggs (east)	WI	99
S	S-2d	15235	67	I 80	Richards St (west)	WI	100
S	S-2d	15245	69	I 80	Meadow Center St Exit WB	WI	101
S	S-2e	15255	71	I 80	Larkin (half mile east)	WI	102
S	S-2d	15265	73	I 80	Larkin (half mile west)	WI	103
S	S-2e	15275	75	I 80	Houbolt (half mile east)	WI	104
S	S-2d	15285	77	I 80	Houbolt Exit EB	WI	105
S	S-2d	15295	79	I 80	I 55 (east)	WI	106
S	S-2e	15305	81	I 80	River Rd	WI	107
S	S-2d	15315	83	I 80	I 55 (one mile west)	WI	108
S	S-2d	15325	85	I 80	Shepley Rd (quarter mile east)	WI	109
S	S-2i	20055	1730	US 45 LaGrange Rd	US 30 Lincoln Hwy	WI	110
S	S-2i	20105	1740	Independence Blvd	Taylor St (north)	WI	111
S	S-2i	20145	1750	IL 126 Plainfield Rd	143rd St (north)	WI	112
S	S-2i	20175	1760	7th St	Peppermill Rd (west)	WI	113
S	S-2i	20180	1770	Manhattan Rd	Elwood (one mile north)	WI	114

S	S-2i	20185	1780	I 57	Kennedy Rd (east)	WI	115
S	S-2i	20190	1790	Peotone Beecher Rd	Kedzie Ave (west)	WI	116
S	S-2i	20195	1850	I 80	Shepley Rd Holt Rd (north)	WI	117
S	S-2i	20196	1840	I 80	Cherry Hill Rd	WI	118
S	S-2i	20200	1860	I 55 Stev	IL 113 (south)	WI	119
S	S-2i	22040	5182	US 52 Joliet Rd	US 45 LaGrange Rd	WI	120
S	S-2j	23100		I 55 Stev	IL 129	WI	121
S	S-2j	23200		I 57	US 30 (north)	WI	122
S	S-2j	23300		I 57	Peotone Wilmington Exit	WI	123

Sys.	Type	Loc. #	DMS	Main Route	Cross Street	Co.	Qty
S	S-3f	15107	DMS-39	I 80 EB	US 45 LaGrange Rd (west)	WI	1
S	S-3f	15121	DMS-40	I 80 WB	Wolf Rd (west)	WI	2
S	S-3f	15210	DMS-41	I 80 EB	Cherry Hill Rd (west)	WI	3
S	S-3c	1570	DMS-34	I 55 Stev NE	Caton Farm	WI	4
S	S-3c	1605	DMS-33	I 55 Stev NE	US 6	WI	5

Sys.	Type	Loc. #	Length	Main Route	Cross Street	Co.	Qty
S	S-4 GATE	IE1	5 FT	I 94	Lawrence Ave (south of)	CO	1
S	S-4 GATE	IE2	9 FT	I 94	Lawrence Ave (south of)	CO	2
S	S-4 GATE	IE3	12 FT	I 94	Lawrence Ave (south of)	CO	3
S	S-4 GATE	IE4	16 FT	I 94	Lawrence Ave (south of)	CO	4
S	S-4 GATE	IE5	17 FT	I 94	Lawrence Ave (south of)	CO	5
S	S-4 GATE	IE6	17 FT	I 94	Lawrence Ave (south of)	CO	6
S	S-4 GATE	IE7	17 FT	I 94	Lawrence Ave (south of)	CO	7
S	S-4 GATE	IE8	17 FT	I 94	Wilson Ave (north of)	CO	8
S	S-4 GATE	IE9	17 FT	I 94	Wilson Ave (north of)	CO	9
S	S-4 GATE	IE10	10 FT	I 94	Wilson Ave (north of)	CO	10
S	S-4 GATE	IE11	9 FT	I 94	Wilson Ave (north of)	CO	11
S	S-4 GATE	IE12	22 FT	I 94	Wilson Ave (south of)	CO	12
S	S-4 GATE	IE13	16 FT	I 94	Wilson Ave (south of)	CO	13
S	S-4	IE14	8 FT	I 94	Wilson Ave (south of)	CO	14

	GATE						
S	S-4 GATE	IE15	5 FT	I 94	Wilson Ave (south of)	CO	15
S	S-4 GATE	IS1	12 FT	I 90 94	Sacramento Ave (north of)	CO	16
S	S-4 GATE	IS2	15 FT	I 90 94	Sacramento Ave (north of)	CO	17
S	S-4 GATE	IS3	18 FT	I 90 94	Sacramento Ave (north of)	CO	18
S	S-4 GATE	IS4	21 FT	I 90 94	Sacramento Ave (north of)	CO	19
S	S-4 GATE	IS5	23 FT	I 90 94	Sacramento Ave (north of)	CO	20
S	S-4 GATE	IS6	23 FT	I 90 94	Sacramento Ave (north of)	CO	21
S	S-4 GATE	IS7	23 FT	I 90 94	Sacramento Ave (north of)	CO	22
S	S-4 GATE	IS8	23 FT	I 90 94	Sacramento Ave (north of)	CO	23
S	S-4 GATE	IS9	23 FT	I 90 94	Sacramento Ave (north of)	CO	24
S	S-4 GATE	IS10	14 FT	I 90 94	Sacramento Ave (north of)	CO	25
S	S-4 GATE	IS11	14 FT	I 90 94	Kedzie Ave (south of)	CO	26
S	S-4 GATE	IS12	23 FT	I 90 94	Kedzie Ave (south of)	CO	27
S	S-4 GATE	IS13	23 FT	I 90 94	Kedzie Ave (south of)	CO	28
S	S-4 GATE	IS14	23 FT	I 90 94	Kedzie Ave (south of)	CO	29
S	S-4 GATE	IS15	23 FT	I 90 94	Kedzie Ave (south of)	CO	30
S	S-4 GATE	IS16	23 FT	I 90 94	Kedzie Ave (south of)	CO	31
S	S-4 GATE	IS17	23 FT	I 90 94	Kedzie Ave (south of)	CO	32
S	S-4 GATE	IS18	22 FT	I 90 94	Kedzie Ave (south of)	CO	33
S	S-4 GATE	IS19	21 FT	I 90 94	Kedzie Ave (south of)	CO	34
S	S-4 GATE	IS20	18 FT	I 90 94	Kedzie Ave (south of)	CO	35
S	S-4 GATE	IS21	16 FT	I 90 94	Kedzie Ave (south of)	CO	36
S	S-4 GATE	IS22	14 FT	I 90 94	Kedzie Ave (south of)	CO	37
S	S-4 GATE	IS23	12 FT	I 90 94	Kedzie Ave (south of)	CO	38
S	S-4 GATE	IS24	10 FT	I 90 94	Kedzie Ave (south of)	CO	39
S	S-4 GATE	IW1	5 FT	I 90	Montrose Ave (north of)	CO	40

S	S-4 GATE	IW2	9 FT	I 90	Montrose Ave (north of)	CO	41
S	S-4 GATE	IW3	11 FT	I 90	Montrose Ave (north of)	CO	42
S	S-4 GATE	IW4	14 FT	I 90	Montrose Ave (north of)	CO	43
S	S-4 GATE	IW5	17 FT	I 90	Montrose Ave (north of)	CO	44
S	S-4 GATE	IW6	17 FT	I 90	Montrose Ave (north of)	CO	45
S	S-4 GATE	IW7	17 FT	I 90	Montrose Ave (north of)	CO	46
S	S-4 GATE	IW8	17 FT	I 90	Montrose Ave (north of)	CO	47
S	S-4 GATE	IW9	17 FT	I 90	Montrose Ave (north of)	CO	48
S	S-4 GATE	IW10	8 FT	I 90	Montrose Ave (north of)	CO	49
S	S-4 GATE	IW11	9 FT	I 90	Montrose Ave (north of)	CO	50
S	S-4 GATE	IW12	20 FT	I 90	Montrose Ave (north of)	CO	51
S	S-4 GATE	IW13	19 FT	I 90	Montrose Ave	CO	52
S	S-4 GATE	IW14	14 FT	I 90	Montrose Ave	CO	53
S	S-4 GATE	IW15	10 FT	I 90	Montrose Ave (south of)	CO	54
S	S-4 GATE	IW16	6 FT	I 90	Montrose Ave (south of)	CO	55
S	S-4 GATE	IW17	5 FT	I 90	Montrose Ave (south of)	CO	56
S	S-4 GATE	IW18	5 FT	I 90	Montrose Ave (south of)	CO	57
S	S-4 GATE	IW19	5 FT	I 90	Montrose Ave (south of)	CO	58
S	S-4 GATE	IW20	5 FT	I 90	Montrose Ave (south of)	CO	59
S	S-4 GATE	OM1	12 FT	I 90 94	Grand Ave (south of)	CO	60
S	S-4 GATE	OM2	12 FT	I 90 94	Grand Ave (south of)	CO	61
S	S-4 GATE	OM3	12 FT	I 90 94	Grand Ave (south of)	CO	62
S	S-4 GATE	OM4	15 FT	I 90 94	Grand Ave (south of)	CO	63
S	S-4 GATE	OM5	14 FT	I 90 94	Grand Ave (south of)	CO	64
S	S-4 GATE	OM6	14 FT	I 90 94	Grand Ave (south of)	CO	65
S	S-4 GATE	OM7	20 FT	I 90 94	Grand Ave (south of)	CO	66
S	S-4 GATE	OM8	20 FT	I 90 94	Grand Ave (south of)	CO	67

S	S-4 GATE	OM9	18 FT	I 90 94	Grand Ave (south of)	CO	68
S	S-4 GATE	OM10	6 FT	I 90 94	Grand Ave (south of)	CO	69
S	S-4 GATE	OM11	2 FT	I 90 94	Grand Ave (south of)	CO	70
S	S-4 GATE	OM12	16 FT	I 90 94	Grand Ave (south of)	CO	71
S	S-4 GATE	OM13	17 FT	I 90 94	Grand Ave (south of)	CO	72
S	S-4 GATE	OM14	17 FT	I 90 94	Grand Ave (south of)	CO	73
S	S-4 GATE	OM15	15 FT	I 90 94	Grand Ave (south of)	CO	74
S	S-4 GATE	OM16	13 FT	I 90 94	Grand Ave (south of)	CO	75
S	S-4 GATE	OM17	11 FT	I 90 94	Grand Ave (south of)	CO	76
S	S-4 GATE	OM18	7 FT	I 90 94	Grand Ave (south of)	CO	77
S	S-4 GATE	OM19	7 FT	I 90 94	Grand Ave (south of)	CO	78
S	S-4 GATE	OM20	9 FT	I 90 94	Grand Ave (south of)	CO	79
S	S-4 GATE	OM21	9 FT	I 90 94	Grand Ave (south of)	CO	80
S	S-4 GATE	OO1	12 FT	I 90 94	Milwaukee Ave (east of)	CO	81
S	S-4 GATE	OO2	12 FT	I 90 94	Milwaukee Ave	CO	82
S	S-4 GATE	OO3	13 FT	I 90 94	Milwaukee Ave (west of)	CO	83
S	S-4 GATE	OO4	13 FT	I 90 94	Milwaukee Ave (west of)	CO	84
S	S-4 GATE	OO5	13 FT	I 90 94	Milwaukee Ave (west of)	CO	85
S	S-4 GATE	OO6	20 FT	I 90 94	Milwaukee Ave (west of)	CO	86
S	S-4 GATE	OO7	20 FT	I 90 94	Milwaukee Ave (west of)	CO	87
S	S-4 GATE	OO8	8 FT	I 90 94	Milwaukee Ave (west of)	CO	88
S	S-4 GATE	OO9	8 FT	I 90 94	Milwaukee Ave (west of)	CO	89
S	S-4 GATE	OO10	20 FT	I 90 94	Milwaukee Ave (west of)	CO	90
S	S-4 GATE	OO11	20 FT	I 90 94	Milwaukee Ave (west of)	CO	91
S	S-4 GATE	OO12	16 FT	I 90 94	Milwaukee Ave (west of)	CO	92
S	S-4 GATE	OO13	12 FT	I 90 94	Milwaukee Ave (west of)	CO	93
S	S-4 GATE	OO14	6 FT	I 90 94	Milwaukee Ave (west of)	CO	94

S	S-4 GATE	OO15	4 FT	I 90 94	Milwaukee Ave (west of)	CO	95
S	S-4 GATE	OO16	4 FT	I 90 94	Milwaukee Ave (west of)	CO	96
S	S-4 GATE	OS1	6 FT	I 90 94	Logan Blvd (north of)	CO	97
S	S-4 GATE	OS2	10 FT	I 90 94	Logan Blvd (north of)	CO	98
S	S-4 GATE	OS3	14 FT	I 90 94	Logan Blvd (north of)	CO	99
S	S-4 GATE	OS4	16 FT	I 90 94	Logan Blvd (north of)	CO	100
S	S-4 GATE	OS5	20 FT	I 90 94	Logan Blvd (north of)	CO	101
S	S-4 GATE	OS6	21 FT	I 90 94	Logan Blvd (north of)	CO	102
S	S-4 GATE	OS7	21 FT	I 90 94	Logan Blvd (north of)	CO	103
S	S-4 GATE	OS8	21 FT	I 90 94	Logan Blvd (north of)	CO	104
S	S-4 GATE	OS9	21 FT	I 90 94	Logan Blvd (north of)	CO	105
S	S-4 GATE	OS10	21 FT	I 90 94	Logan Blvd (north of)	CO	106
S	S-4 GATE	OS11	13 FT	I 90 94	Logan Blvd (north of)	CO	107
S	S-4 GATE	OS12	14 FT	I 90 94	Logan Blvd (north of)	CO	108
S	S-4 GATE	OS13	23 FT	I 90 94	Logan Blvd (north of)	CO	109
S	S-4 GATE	OS14	23 FT	I 90 94	Logan Blvd (north of)	CO	110
S	S-4 GATE	OS15	23 FT	I 90 94	Logan Blvd (north of)	CO	111
S	S-4 GATE	OS16	23 FT	I 90 94	Logan Blvd (north of)	CO	112
S	S-4 GATE	OS17	23 FT	I 90 94	Logan Blvd (north of)	CO	113
S	S-4 GATE	OS18	21 FT	I 90 94	Logan Blvd (north of)	CO	114
S	S-4 GATE	OS19	20 FT	I 90 94	Logan Blvd (north of)	CO	115
S	S-4 GATE	OS20	18 FT	I 90 94	Logan Blvd (north of)	CO	116
S	S-4 GATE	OS21	16 FT	I 90 94	Logan Blvd (north of)	CO	117

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 AUX	IEAS1	SIGN	I 94	Lawrence Ave (north of)	CO	1
S	S-4 AUX	IEAS2	SIGN	I 94	Lawrence Ave (south of)	CO	2

S	S-4 AUX	ISAS1	SIGN	I 90 94	Kedzie Ave (south of)	CO	3
S	S-4 AUX	ISAS2	SIGN	I 90 94	Kedzie Ave (south of)	CO	4
S	S-4 AUX	IWAS1	SIGN	I 90	Cicero Ave (west of)	CO	5
S	S-4 AUX	IWAS2	SIGN	I 90	Cicero Ave	CO	6
S	S-4 AUX	OMAS1	SIGN	I 90 94	Grand Ave (south of)	CO	7
S	S-4 AUX	OMAS2	SIGN	I 90 94	Grand Ave (south of)	CO	8
S	S-4 AUX	OMAS3	SIGN	I 90 94	Grand Ave (south of)	CO	9
S	S-4 AUX	OOAS1	SIGN	I 90 94	Milwaukee Ave (east of)	CO	10
S	S-4 AUX	OOAS2	SIGN	I 90 94	Milwaukee Ave (east of)	CO	11
S	S-4 AUX	OOAS3	SIGN	I 90 94	Milwaukee Ave (east of)	CO	12
S	S-4 AUX	OSAS1	SIGN	I 90 94	Logan Blvd (north of)	CO	13
S	S-4 AUX	OSAS2	SIGN	I 90 94	Logan Blvd (north of)	CO	14

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 RCP	IER1	PANEL	I 94	Foster Ave	CO	1
S	S-4 RCP	IER2	PANEL	I 94	Wilson Ave (north of)	CO	2
S	S-4 RCP	IER3	PANEL	I 94	Lawrence Ave (south of)	CO	3
S	S-4 RCP	ISR1	PANEL	I 90 94	Kedzie Ave (south of)	CO	4
S	S-4 RCP	ISR2	PANEL	I 90 94	Kedzie Ave (south of)	CO	5
S	S-4 RCP	ISR3	PANEL	I 90 94	Kedzie Ave (south of)	CO	6
S	S-4 RCP	IWR1	PANEL	I 90	Lawrence Ave (south of)	CO	7
S	S-4 RCP	IWR2	PANEL	I 90	Montrose Ave (north of)	CO	8
S	S-4 RCP	IWR3	PANEL	I 90	Montrose Ave (north of)	CO	9
S	S-4 RCP	OMR1	PANEL	I 90	Grand Ave (north of)	CO	10
S	S-4 RCP	OOR1	PANEL	I 90 94	Milwaukee Ave (east of)	CO	11
S	S-4 RCP	OOR2	PANEL	I 90 94	Milwaukee Ave (east of)	CO	12
S	S-4 RCP	OOR3	PANEL	I 90 94	Milwaukee Ave (east of)	CO	13

S	S-4 RCP	OOR4	PANEL	I 90 94	Milwaukee Ave (east of)	CO	14
S	S-4 RCP	OSR1	PANEL	I 90 94	Diversey Ave (south of)	CO	15
S	S-4 RCP	OSR2	PANEL	I 90 94	Diversey Ave (south of)	CO	16

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 GORE	IEG1	GORE SIGN	I 94	Wilson Ave (north of)	CO	1
S	S-4 GORE	ISG1	GORE SIGN	I 90 94	Kedzie Ave (south of)	CO	2
S	S-4 GORE	IWG1	GORE SIGN	I 90	Montrose Ave (north of)	CO	3
S	S-4 GORE	OMG1	GORE SIGN	I 90 94	Ogden Ave (south of)	CO	4
S	S-4 GORE	OOG1	GORE SIGN	I 90 94	Milwaukee Ave (west of)	CO	5
S	S-4 GORE	OSG1	GORE SIGN	I 90 94	Logan Blvd (north of)	CO	6

Sys.	Type	Loc. #	Length	Main Route	Cross Street	Co.	Qty
S	S-4 BARR	IEB1	28 Ft	I 94	Wilson Ave (north of)	CO	1
S	S-4 BARR	ISB1	36.21 Ft	I 90 94	Sacramento Ave (north of)	CO	2
S	S-4 BARR	IWB1	28.94 Ft	I 90	Montrose Ave (north of)	CO	3
S	S-4 BARR	OMB1	22.27 Ft	I 90	Grand Ave (north of)	CO	4
S	S-4 BARR	OOB1	28 Ft	I 90 94	Milwaukee Ave (west of)	CO	5
S	S-4 BARR	OSB1	38.25 Ft	I 90 94	Diversey Ave (south of)	CO	6

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 XSIGN	IEX1	BARR SIGN	I 94	Wilson Ave (south of)	CO	1
S	S-4 XSIGN	ISX1	BARR SIGN	I 90 94	Kedzie Ave (south of)	CO	2
S	S-4 XSIGN	IWX1	BARR SIGN	I 90	Montrose Ave (north of)	CO	3
S	S-4 XSIGN	OMX1	BARR SIGN	I 90 94	Grand Ave (north of)	CO	4
S	S-4 XSIGN	OOX1	BARR SIGN	I 90 94	Milwaukee Ave (west of)	CO	5
S	S-4 XSIGN	OSX1	BARR SIGN	I 90 94	Diversey Ave (south of)	CO	6

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty

S	S-4 CHEV	IEV1	CHEVRON	I 94	Lawrence Ave (south of)	CO	1
S	S-4 CHEV	IEV2	CHEVRON	I 94	Lawrence Ave (south of)	CO	2
S	S-4 CHEV	IEB3	CHEVRON	I 94	Lawrence Ave (south of)	CO	3
S	S-4 CHEV	ISV1	CHEVRON	I 90 94	Kedzie Ave (south of)	CO	4
S	S-4 CHEV	ISB2	CHEVRON	I 90 94	Kedzie Ave (south of)	CO	5
S	S-4 CHEV	ISB3	CHEVRON	I 90 94	Kedzie Ave (south of)	CO	6
S	S-4 CHEV	IWV1	CHEVRON	I 90	Montrose Ave (north of)	CO	7
S	S-4 CHEV	IWV2	CHEVRON	I 90	Montrose Ave (north of)	CO	8
S	S-4 CHEV	IWV3	CHEVRON	I 90	Montrose Ave (north of)	CO	9
S	S-4 CHEV	IWV4	CHEVRON	I 90	Montrose Ave (north of)	CO	10
S	S-4 CHEV	IWV5	CHEVRON	I 90	Montrose Ave (south of)	CO	11
S	S-4 CHEV	OMV1	CHEVRON	I 90 94	Grand Ave (south of)	CO	12
S	S-4 CHEV	OMV2	CHEVRON	I 90 94	Grand Ave (south of)	CO	13
S	S-4 CHEV	OMV3	CHEVRON	I 90 94	Grand Ave (south of)	CO	14
S	S-4 CHEV	OMV4	CHEVRON	I 90 94	Grand Ave (south of)	CO	15
S	S-4 CHEV	OOV1	CHEVRON	I 90 94	Milwaukee Ave	CO	16
S	S-4 CHEV	OOV2	CHEVRON	I 90 94	Milwaukee Ave	CO	17
S	S-4 CHEV	OOV3	CHEVRON	I 90 94	Milwaukee Ave (west of)	CO	18
S	S-4 CHEV	OSV1	CHEVRON	I 90 94	Logan Blvd (north of)	CO	19
S	S-4 CHEV	OSV2	CHEVRON	I 90 94	Logan Blvd (north of)	CO	20
S	S-4 CHEV	OSV3	CHEVRON	I 90 94	Logan Blvd (north of)	CO	21

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 CM	OMCM1	MESSAGE	I 90 94	Fulton St (NW of)	CO	1
S	S-4 CM	OMCM2	MESSAGE	I 90 94	Green St (SE of)	CO	2
S	S-4 CM	OMCM6	MESSAGE	I 90 94	Grand Ave (SE of)	CO	3
S	S-4 CM	OMCM7	MESSAGE	I 90 94	Ohio St (NE of)	CO	4

S	S-4 CM	OOCM3	MESSAGE	Ontario St	Kennedy Split	CO	5
S	S-4 CM	OOCM4	MESSAGE	Ontario St	Kennedy Split (east of)	CO	6
S	S-4 CM	OOCM5	MESSAGE	Ontario St	Chicago River	CO	7
S	S-4 CM	OSCM8	MESSAGE	I 90 94	Fullerton Ave	CO	8
S	S-4 CM	OSCM9	MESSAGE	I 90 94	Diversey Ave (south of)	CO	9
S	S-4 CM	IECM12	MESSAGE	I 94	Lawrence Ave (south of)	CO	10
S	S-4 CM	IECM13	MESSAGE	I 94	Foster Ave	CO	11
S	S-4 CM	ISCM10	MESSAGE	I 90 94	Sacramento Ave	CO	12
S	S-4 CM	ISCM11	MESSAGE	I 90 94	Kimball Ave	CO	13
S	S-4 CM	IWCM14	MESSAGE	I 90	Lawrence Ave (south of)	CO	14
S	S-4 CM	IWCM15	MESSAGE	I 90	Montrose Ave (north of)	CO	15

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 OPSC	IECC1	OPS CAM	I 94	Lawrence Ave (south of)	CO	1
S	S-4 OPSC	IECC2	OPS CAM	I 94	Lawrence Ave (south of)	CO	2
S	S-4 OPSC	IECC3	OPS CAM	I 94	Lawrence Ave (south of)	CO	3
S	S-4 OPSC	IECC4	OPS CAM	I 94	Lawrence Ave (south of)	CO	4
S	S-4 OPSC	IECC5	OPS CAM	I 94	Wilson Ave (south of)	CO	5
S	S-4 OPSC	IECC6	OPS CAM	I 94	Wilson Ave (south of)	CO	6
S	S-4 OPSC	ISCC1	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	7
S	S-4 OPSC	ISCC2	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	8
S	S-4 OPSC	ISCC3	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	9
S	S-4 OPSC	ISCC4	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	10
S	S-4 OPSC	ISCC5	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	11
S	S-4 OPSC	ISCC6	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	12
S	S-4 OPSC	ISCC7	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	13
S	S-4 OPSC	ISCC8	OPS CAM	I 90 94	Sacramento Ave (north of)	CO	14

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 OPSC	IWCC1	OPS CAM	I 90 94	Cicero Ave	CO	15
S	S-4 OPSC	IWCC2	OPS CAM	I 90	Cicero Ave (south of)	CO	16
S	S-4 OPSC	IWCC3	OPS CAM	I 90	Montrose Ave (north of)	CO	17
S	S-4 OPSC	IWCC5	OPS CAM	I 90	Montrose Ave (north of)	CO	18
S	S-4 OPSC	IWCC6	OPS CAM	I 90	Montrose Ave (south of)	CO	19
S	S-4 OPSC	IWCC7	OPS CAM	I 90	Montrose Ave (south of)	CO	20
S	S-4 OPSC	OMCC1	OPS CAM	I 90 94	Grand Ave (north of)	CO	21
S	S-4 OPSC	OMCC2	OPS CAM	I 90 94	Grand Ave (north of)	CO	22
S	S-4 OPSC	OMCC3	OPS CAM	I 90 94	Ogden Ave (south of)	CO	23
S	S-4 OPSC	OMCC4	OPS CAM	I 90 94	Grand Ave (north of)	CO	24
S	S-4 OPSC	OMCC5	OPS CAM	I 90 94	Ogden Ave (south of)	CO	25
S	S-4 OPSC	OMCC6	OPS CAM	I 90 94	Ogden Ave (south of)	CO	26
S	S-4 OPSC	OMCC7	OPS CAM	I 90 94	Ogden Ave (south of)	CO	27
S	S-4 OPSC	OOCC1	OPS CAM	I 90 94	Milwaukee Ave (west of)	CO	28
S	S-4 OPSC	OOCC2	OPS CAM	I 90 94	Milwaukee Ave (west of)	CO	29
S	S-4 OPSC	OOCC3	OPS CAM	I 90 94	Milwaukee Ave (east of)	CO	30
S	S-4 OPSC	OOCC4	OPS CAM	I 90 94	Milwaukee Ave (east of)	CO	31
S	S-4 OPSC	OOCC5	OPS CAM	I 90 94	Milwaukee Ave (east of)	CO	32
S	S-4 OPSC	OOCC6	OPS CAM	I 90 94	Milwaukee Ave (east of)	CO	33
S	S-4 OPSC	OSCC1	OPS CAM	I 90 94	Diversey Ave (south of)	CO	34
S	S-4 OPSC	OSCC2	OPS CAM	I 90 94	Diversey Ave (south of)	CO	35
S	S-4 OPSC	OSCC3	OPS CAM	I 90 94	Diversey Ave (south of)	CO	36
S	S-4 OPSC	OSCC4	OPS CAM	I 90 94	Diversey Ave (south of)	CO	37
S	S-4 OPSC	OSCC5	OPS CAM	I 90 94	Diversey Ave (south of)	CO	38
S	S-4 OPSC	OSCC6	OPS CAM	I 90 94	Diversey Ave (south of)	CO	39

S	S-4 R-GATE	G1	R-GATE	IL 38	I 88 (east of)	DU	1
S	S-4 R-GATE	G2	R-GATE	IL 38	I 88 (east of)	DU	2
S	S-4 R-GATE	G3	R-GATE	IL 38	I 88 (east of)	DU	3
S	S-4 R-GATE	G4	R-GATE	IL 38	I 88 (east of)	DU	4
S	S-4 R-GATE	G5	R-GATE	IL 38	I 88 (east of)	DU	5
S	S-4 R-GATE	G6	R-GATE	IL 38	I 88 (east of)	DU	6
S	S-4 R-GATE	G7	R-GATE	IL 38	I 88 (east of)	DU	7
S	S-4 R-GATE	G8	R-GATE	IL 38	I 88 (east of)	DU	8
S	S-4 R-GATE	G9	R-GATE	IL 38	I 88 (east of)	DU	9
S	S-4 R-GATE	G10	R-GATE	IL 38	I 88 (east of)	DU	10

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 R-DMS	R1	DMS	IL 38	York Rd (west of)	DU	1
S	S-4 R-DMS	R3	DMS	IL 38	I 88 (west of)	DU	2
S	S-4 R-DMS	R4	DMS	IL 38	I 88 (east of)	DU	3

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 R-CHEV	V1	CHEVRON	IL 38	I 88 (east of)	DU	1
S	S-4 R-CHEV	V2	CHEVRON	IL 38	I 88 (east of)	DU	2
S	S-4 R-CHEV	V3	CHEVRON	IL 38	I 88 (east of)	DU	3
S	S-4 R-CHEV	V4	CHEVRON	IL 38	I 88 (east of)	DU	4
S	S-4 R-CHEV	V5	CHEVRON	IL 38	I 88 (east of)	DU	5
S	S-4 R-CHEV	V6	CHEVRON	IL 38	I 88 (east of)	DU	6

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 R-AUX	AS1	AUX SIGN	IL 38	I 88 (west of)	DU	1
S	S-4 R-AUX	AS2	AUX SIGN	IL 38	I 88 (west of)	DU	2

Sys.	Type	Loc. #	Type	Main Route	Cross Street	Co.	Qty

	Code						
S	S-4 R-CAM	C1	OPS CAM	IL 38	York Rd (west of)	DU	1
S	S-4 R-CAM	C2	OPS CAM	IL 38	York Rd (east of)	DU	2
S	S-4 R-CAM	C3	OPS CAM	IL 38	York Rd (east of)	DU	3
S	S-4 R-CAM	C4	OPS CAM	IL 38	I 88 (east of)	DU	4
S	S-4 R-CAM	C5	OPS CAM	IL 38	I 88 (east of)	DU	5
S	S-4 R-CAM	C6	OPS CAM	IL 38	I 88 (east of)	DU	6
S	S-4 R-CAM	C7	OPS CAM	IL 38 Ramp	I 294 (south of)	DU	7
S	S-4 R-CAM	C8	OPS CAM	IL 38	Hillside Tower (3 Cam)	DU	8

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-4 R-GATE	IKIBAS	GATE	I 290	Ashland Ave IB	CO	1
S	S-4 R-GATE	IKIBCA	GATE	I 290	California Ave IB	CO	2
S	S-4 R-GATE	IKIBCE	GATE	I 290	Central Ave IB	CO	3
S	S-4 R-GATE	IKIBDA	GATE	I 290	Damen Ave IB	CO	4
S	S-4 R-GATE	IKIBHO	GATE	I 290	Homan Ave IB	CO	5
S	S-4 R-GATE	IKIBIN	GATE	I 290	Independence Ave IB	CO	6
S	S-4 R-GATE	IKIBKO	GATE	I 290	Kostner Ave IB	CO	7
S	S-4 R-GATE	IKIBLA	GATE	I 290	Laramie Ave IB	CO	8
S	S-4 R-GATE	IKIBOA	GATE	I 290	Oakley Ave IB	CO	9
S	S-4 R-GATE	KEIBAD	GATE	I 90 94	Addison St IB	CO	10
S	S-4 R-GATE	KEIBAR	GATE	I 90 94	Armitage Ave IB	CO	11
S	S-4 R-GATE	KEIBAU	GATE	I 90 94	Augusta Blvd IB	CO	12
S	S-4 R-GATE	KEIBCE	GATE	I 90	Central Ave IB	CO	13
S	S-4 R-GATE	KEIBCN	GATE	I 90	Canfield Ave IB	CO	14
S	S-4 R-GATE	KEIBCU	GATE	I 90	Cumberland Ave IB	CO	15
S	S-4 R-GATE	KEIBD1	GATE	I 90 94	Division St IB	CO	16

S	S-4 R-GATE	KEIBDV	GATE	I 90 94	Diversey Ave IB	CO	17
S	S-4 R-GATE	KEIBFO	GATE	I 90	Foster Ave IB	CO	18
S	S-4 R-GATE	KEIBFU	GATE	I 90 94	Fullerton Ave IB	CO	19
S	S-4 R-GATE	KEIBHAN	GATE	I 90	Harlem Ave OB	CO	20
S	S-4 R-GATE	KEIBHAS	GATE	I 90	Harlem Ave OB	CO	21
S	S-4 R-GATE	KEIBIR	GATE	I 90 94	Irving Park Rd IB	CO	22
S	S-4 R-GATE	KEIBKE	GATE	I 90 94	Kedzie Ave IB	CO	23
S	S-4 R-GATE	KEIBKI	GATE	I 90 94	Kimball Ave B	CO	24
S	S-4 R-GATE	KEIBMO	GATE	I 90 94	Montrose Ave IB	CO	25
S	S-4 R-GATE	KEIBNA	GATE	I 90	Nagle Ave IB	CO	26
S	S-4 R-GATE	KEIBNO	GATE	I 90 94	North Ave IB	CO	27
S	S-4 R-GATE	KEIBPU	GATE	I 90 94	Pulaski Rd IB	CO	28
S	S-4 R-GATE	KEIBSA	GATE	I 90	Sayre Ave IB	CO	29
S	S-4 R-GATE	KEIBWE	GATE	I 90 94	Webster Ave IB	CO	30
S	S-4 R-GATE	KEOBAD	GATE	I 90 94	Addison St OB	CO	31
S	S-4 R-GATE	KEOBAR	GATE	I 90 94	Armitage Ave OB	CO	32
S	S-4 R-GATE	KEOBCA	GATE	I 90 94	California Ave OB	CO	33
S	S-4 R-GATE	KEOBCU	GATE	I 90	Cumberland Ave OB	CO	34
S	S-4 R-GATE	KEOBDI	GATE	I 90 94	Division St OB	CO	35
S	S-4 R-GATE	KEOBFO	GATE	I 90	Foster Ave OB	CO	36
S	S-4 R-GATE	KEOBFU	GATE	I 90 94	Fullerton Ave OB	CO	37
S	S-4 R-GATE	KEOBHA	GATE	I 90	Harlem Ave OB	CO	38
S	S-4 R-GATE	KEOBKI	GATE	I 90 94	Kimball Ave OB	CO	39
S	S-4 R-GATE	KEOBNA	GATE	I 90	Nagle Ave OB	CO	40
S	S-4 R-GATE	KEOBNO	GATE	I 90 94	North Ave OB	CO	41
S	S-4 R-GATE	KEOBOG	GATE	I 90 94	Ogden Ave OB	CO	42

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-5 CAM	BF01A	TM CAMERA	I 94 Ford	Stoney Island Feeder	CO	1

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-5 CAM	DR1	TM CAMERA	I 90 94 Ryan	Archer Ave	CO	1
S	S-5 CAM	DR1A	TM CAMERA	I 90 94 Ryan	Archer Ave	CO	2
S	S-5 CAM	DR2	TM CAMERA	I 90 94 Ryan	I 55	CO	3
S	S-5 CAM	DR2B	TM CAMERA	I 90 94 Ryan	28th Place	CO	4

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-5 CAM	FS0	TM CAMERA	I 57	Wentworth Ave (south of)	CO	1

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-5 CAM	IE17	TM CAMERA	I 80	US 45 (west of)	CO	1
S	S-5 CAM	IE18	TM CAMERA	I 80	104^{Th} St	CO	2
S	S-5 CAM	IE19	TM CAMERA	I 80	Wolf Rd	CO	3
S	S-5 CAM	IE20	TM CAMERA	I 80	116^{Th} St	WI	4
S	S-5 CAM	IE21	TM CAMERA	I 80	187^{th} St	WI	5
S	S-5 CAM	IE22	TM CAMERA	I 80	Parker Rd	WI	6
S	S-5 CAM	IE23	TM CAMERA	I 80	I 355 Tollway (east of)	WI	7
S	S-5 CAM	IE23A	TM CAMERA	I 80	Francis Rd	WI	8
S	S-5 CAM	IE24	TM CAMERA	I 80	Michael Ln (west of I 355)	WI	9

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-5 CAM	KE0B	TM CAMERA	I 90 94 JFK	Hubbard St Cave	CO	1
S	S-5 CAM	KE0C	TM CAMERA	I 90 94 JFK	Hubbard St Cave	CO	2
S	S-5 CAM	KE0D	TM CAMERA	I 90 94 JFK	Hubbard St Cave	CO	3
S	S-5 CAM	KE0E	TM CAMERA	I 90 94 JFK	Hubbard St Cave	CO	4

S	S-5 CAM	KE0F	TM CAMERA	I 90 94 JFK	Hubbard St Cave	CO	5
S	S-5 CAM	KE1	TM CAMERA	I 90 94 JFK	Grand Ave	CO	6
S	S-5 CAM	KE3	TM CAMERA	I 90 94 JFK	Webster Ave	CO	7
S	S-5 CAM	KE3A	TM CAMERA	I 90 94 JFK	Webster Ave Damon Ave	CO	8
S	S-5 CAM	KE3B	TM CAMERA	I 90 94 JFK	Damon Ave	CO	9
S	S-5 CAM	KE4	TM CAMERA	I 90 94 JFK	Fullerton Ave N AIS	CO	10
S	S-5 CAM	KE4A	TM CAMERA	I 90 94 JFK	Fullerton Ave	CO	11
S	S-5 CAM	KE4B	TM CAMERA	I 90 94 JFK	Fullerton Ave S AIS	CO	12
S	S-5 CAM	KE4C	TM CAMERA	I 90 94 JFK	Western Ave	CO	13
S	S-5 CAM	KE4D	TM CAMERA	I 90 94 JFK	Logan Blvd Western Ave	CO	14
S	S-5 CAM	KE4E	TM CAMERA	I 90 94 JFK	Logan Blvd	CO	15
S	S-5 CAM	KE5	TM CAMERA	I 90 94 JFK	Diversey Ave	CO	16
S	S-5 CAM	KE5A	TM CAMERA	I 90 94 JFK	California Diversey Ave	CO	17
S	S-5 CAM	KE5B	TM CAMERA	I 90 94 JFK	California Ave	CO	18
S	S-5 CAM	KE5C	TM CAMERA	I 90 94 JFK	Sacramento Ave (SE of)	CO	19
S	S-5 CAM	KE5D	TM CAMERA	I 90 94 JFK	Sacramento Ave	CO	20
S	S-5 CAM	KE6	TM CAMERA	I 90 94 JFK	Kimball Ave	CO	21
S	S-5 CAM	KE6A	TM CAMERA	I 90 94 JFK	Kimball Ave (NW of)	CO	22
S	S-5 CAM	KE7	TM CAMERA	I 90 94 JFK	Irving Park Rd	CO	23
S	S-5 CAM	KE7A	TM CAMERA	I 90 94 JFK	Keeler Ave Irving Park Rd	CO	24
S	S-5 CAM	KE7B	TM CAMERA	I 90 94 JFK	Keeler Ave	CO	25
S	S-5 CAM	KE7C	TM CAMERA	I 90 94 JFK	Kostner Ave	CO	26
S	S-5 CAM	KE7D	TM CAMERA	I 90 94 JFK	Kostner Ave (NW of)	CO	27

Sys.	Type Code	Loc. #	Type	Main Route	Cross Street	Co.	Qty
S	S-5 CAM	NS2	TM CAMERA	I 355 Tlwy SB	Army Trail Rd	DU	1

Sys.	Type	Loc. #	Type	Main Route	Cross Street	Co.	Qty

	Code						
S	S-5 CAM	ST1	TM CAMERA	I 55 STEV	Canal (west of)	CO	1
S	S-5 CAM	ST1A	TM CAMERA	I 55 STEV	I 90 94 Kennedy	CO	2
S	S-5 CAM	ST1B	TM CAMERA	I 55 STEV	I 90 94 Dan Ryan	CO	3
S	S-5 CAM	ST1C	TM CAMERA	I 55 STEV	Halsted St (east of)	CO	4
S	S-5 CAM	ST16	TM CAMERA	I 55 STEV	Wolf Rd	CO	5
S	S-5 CAM	ST16A	TM CAMERA	I 55 STEV	I 294 Tollway	CO	6
S	S-5 CAM	ST17	TM CAMERA	I 55 STEV	County Line Rd (east of)	CO	7
S	S-5 CAM	ST18	TM CAMERA	I 55 STEV	County Line Rd (west of)	CO	8
S	S-5 CAM	ST18A	TM CAMERA	I 55 STEV	Madison St	DU	9
S	S-5 CAM	ST19	TM CAMERA	I 55 STEV	IL 83	DU	10
S	S-5 CAM	ST20	TM CAMERA	I 55 STEV	Portmouth Dr	DU	11
S	S-5 CAM	ST20A	TM CAMERA	I 55 STEV	Cass Ave	DU	12
S	S-5 CAM	ST22	TM CAMERA	I 55 STEV	Lemont Rd (east of)	DU	13
S	S-5 CAM	ST23	TM CAMERA	I 55 STEV	Lemont Rd	DU	14
S	S-5 CAM	ST23A	TM CAMERA	I 55 STEV	I 355 to Lemont Rd	DU	15
S	S-5 CAM	ST24	TM CAMERA	I 55 STEV	I 355	DU	16
S	S-5 CAM	ST24A	TM CAMERA	I 55 STEV	Joliet Rd	WI	17
S	S-5 CAM	ST25	TM CAMERA	I 55 STEV	IL 53 to Joliet Rd	WI	18
S	S-5 CAM	ST26	TM CAMERA	I 55 STEV	IL 53	WI	19
S	S-5 CAM	ST27	TM CAMERA	I 55 STEV	Schmidt Rd (east of)	WI	20
S	S-5 CAM	ST28	TM CAMERA	I 55 STEV	IB Weigh Station	WI	21
S	S-5 CAM	ST29	TM CAMERA	I 55 STEV	Windham Pkwy	WI	22
S	S-5 CAM	ST30	TM CAMERA	I 55 STEV	Weber Rd	WI	23
S	S-5 CAM	ST30A	TM CAMERA	I 55 STEV	Weber Rd NW	WI	24
S	S-5 CAM	ST31	TM CAMERA	I 55 STEV	113th St to Weber Rd	WI	25
S	S-5 CAM	ST32	TM CAMERA	I 55 STEV	IL 126 (north of)	WI	26

S	S-5 CAM	ST32A	TM CAMERA	I 55 STEV	IL 126 (south of)	WI	27
S	S-5 CAM	ST34	TM CAMERA	I 55 STEV	Lockport St	WI	28
S	S-5 CAM	ST35	TM CAMERA	I 55 STEV	159th St (south of)	WI	29
S	S-5 CAM	ST35A	TM CAMERA	I 55 STEV	Dan Ireland	WI	30
S	S-5 CAM	ST36	TM CAMERA	I 55 STEV	US 30 (north of)	WI	31
S	S-5 CAM	ST36A	TM CAMERA	I 55 STEV	US 30 (south of)	WI	32
S	S-5 CAM	ST37	TM CAMERA	I 55 STEV	US 30 to Caton Farm	WI	33
S	S-5 CAM	ST37A	TM CAMERA	I 55 STEV	Caton Farm Rd	WI	34
S	S-5 CAM	ST38	TM CAMERA	I 55 STEV	Caton Farm Rd (south of)	WI	35
S	S-5 CAM	ST39	TM CAMERA	I 55 STEV	Black Rd (south of)	WI	36
S	S-5 CAM	ST40	TM CAMERA	I 55 STEV	Jefferson St (north of)	WI	37
S	S-5 CAM	ST40A	TM CAMERA	I 55 STEV	Jefferson St (south of)	WI	38
S	S-5 CAM	ST42	TM CAMERA	I 55 STEV	Seil Rd	WI	39
S	S-5 CAM	ST43	TM CAMERA	I 55 STEV	I 80 NE Quad	WI	40
S	S-5 CAM	ST43A	TM CAMERA	I 55 STEV	I 80 SE Quad	WI	41
S	S-5 CAM	ST44	TM CAMERA	I 55 STEV	I 55 Maint Yd	WI	42
S	S-5 CAM	ST45	TM CAMERA	I 55 STEV	US 6	WI	43
S	S-5 CAM	ST46	TM CAMERA	I 55 STEV	Bluff Rd SB Exit	WI	44
S	S-5 CAM	ST47	TM CAMERA	I 55 STEV	Des Plaines River (north of)	WI	45
S	S-5 CAM	ST47B	TM CAMERA	I 55 STEV	Des Plaines Riv Bridge (under)	WI	46
S	S-5 CAM	ST51	TM CAMERA	I 55 STEV	Des Plaines River (south of)	WI	47
S	S-5 CAM	ST52	TM CAMERA	I 55 STEV	Lorenzo Rd	WI	48

Sys.	Type	Facility	Loc. #	Main Route	Co.	Qty
S	S-6	Building / Monopole / (1)TM Camera KE1A	A	I 90 94 JFK	CO	1
S	S-6	Building	B	I 90 94 JFK	CO	2

S	S-6	Building	C	I 90 94 JFK	CO	3
S	S-6	Building / Monopole /(1) TM Camera AKEO5C	D	I 90 94 JFK	CO	4
S	S-6	Building / Monopole / (1) TM Camera ED0	E	I 90 94 JFK	CO	5
S	S-6	Hut	H290A	I 290	CO	6
S	S-6	Cabinet/ Monopole/Cameras (6) (KIDS 1-6)	H55A	I 55	CO	7
S	S-6	Hut	H55B	I 55	CO	8
S	S-6	Hut	H55W	I 55	CO	9
S	S-6	Hut W/Camera (1) TM Camera AFS1	H57A	I 57	CO	10
S	S-6	Hut w/Camera (2) TM Camera AFS13	H57B	I 57	CO	11
S	S-6	Hut	H80	I 80	CO	12
S	S-6	Hut	H94	I 90 94 Ryan	CO	13
S	S-6	Building / Monopole / (3) Cameras (1-3)	HQ1/COM	I 90	CO	14
S	S-6	Hut/Cameras (6) KIDS Cameras (1-6)	HRB	IL 38 RACS Ramp	CO	15
S	S-6	Tower/Base Station/Camera (1) TM Camera AED01	TFO	I 94 Edens	CO	16
S	S-6	Tower / 3 Huts / (3) Cameras AIK14A, AIK14B, AIK14C	THIL	I 294 I 88	CO	17
S	S-6	Tower / Hut / (3) Cameras AIK23, AIK23A, AIK23B	TNOR	I 290	DU	18
S	S-6	Tower / Base Station	TPLA	IL 47	KA	19
S	S-6	Building / Monopole / 9 Cameras plus AIK8	TSC	445 Harrison/Oak Park	CO	20
S	S-6	Tower / Hut / (3) Cameras	TSCH	I 90	CO	21
S	S-6	Tower / Hut / (1) Camera AKI0A	TSTA	I 80 Kingery	CO	22

Sys.	Type		Loc.	Location Name	Qty
S	S-7	Fiber	I 190	IL 190	1
S	S-7	Fiber	I 290	I 290 IKE	2
S	S-7	Fiber	I 355	I 355	3
S	S-7	Fiber	IL 394	IL 394	4
S	S-7	Fiber	IL 53	IL 53 I 355	5
S	S-7	Fiber	I 55	I 55 STEV	6
S	S-7	Fiber	I 57	I 57	7
S	S-7	Fiber	I 80	I 80	8
S	S-7	Fiber	I 90	I 90 JFK	9
S	S-7	Fiber	I 94	I 94 EDENS	10

TRAFFIC SIGNAL SYSTEM -- EMC LOCATIONS AT THE TIME OF CONTRACT DEVELOPMENT

Location #		Type	Main Route	Cross Street	City	Co.	Qty
TS	5	T-1A	I 55 N Ramp WB Off Ramp	IL 43 Harlem Ave	Summit	CO	1
TS	10	T-1A	I 55	Central Ave	Forest View	CO	2
TS	15	T-1A	I 55 S Ramp EB Off Ramp	IL 43 Harlem Ave	Summit	CO	3
TS	22	T-1A	131st St	Kedzie Ave	Blue Island	CO	4
TS	25	T-1A	I 57 E Ramp	Marshfield Ave 127th St	Calumet Park	CO	5
TS	35	T-1A	I 57 W Ramp	Paulina St 127th St	Calumet Park	CO	6
TS	50	T-1A	I 80	Kedzie Ave	Hazel Crest	CO	7
TS	60	T-1A	I 94 Edens Spur N Ramp Brookside Plaza	IL 43 Waukegan Rd	Northbrook	CO	8
TS	61	T-1A	I 94 Edens Spur S Ramp	IL 43 Waukegan Rd	Northbrook	CO	9
TS	65	T-1A	I 290 Eisenhower	IL 50 Cicero Ave	Lincolnwood	CO	10
TS	75	T-1A	I 290 Eisenhower S Frontage Rd	US 12 20 45 Mannheim Rd	Westchester	CO	11
TS	77	T-1A	I 290 Eisenhower Ramp F	US 12 20 45 Mannheim Rd	Hillside	CO	12
TS	80	T-1A	I 290 Eisenhower Ramp B & G	US 12 20 45 Mannheim Rd	Hillside	CO	13
TS	85	T-1A	I 290 Eisenhower	IL 43 Harlem Ave	Oak Park Forest Park	CO	14
TS	90	T-1A	I 290 Eisenhower IL 53 E Frontage Rd	IL 58 Golf Rd	Schaumburg	CO	15
TS	91	T-1A	I 290 Eisenhower IL 53 W Frontage Rd	IL 58 Golf Rd	Schaumburg	CO	16
TS	95	T-1A	I 290 Eisenhower IL 53 W Frontage Rd	IL 72 Higgins Rd	Schaumburg	CO	17
TS	96	T-1A	I 290 Eisenhower IL 53 E Frontage Rd	IL 72 Higgins Rd	Schaumburg	CO	18
TS	105	T-1A	I 290 Eisenhower	17th Ave	Maywood	CO	19
TS	110	T-1A	I 290 Eisenhower	Austin Blvd	Oak Park	CO	20
TS	115	T-1A	I 290 Eisenhower	DesPlaines Ave Harrison Ave	Forest Park	CO	21
TS	130	T-1A	I 294 Tri-State Tlwy W Ramp	Cermak Rd 22nd St	Westchester	CO	22
TS	135	T-1A	I 294 Tri-State Tlwy W Ramp	Cermak Rd 22nd St	Westchester	CO	23
TS	140	T-1A	I 294 Tri-State Tlwy W Ramp	Willow Rd	Glenview	CO	24
TS	145	T-1A	I 294 Tri-State Tlwy W Ramp	Willow Rd	Glenview	CO	25
TS	155	T-1A	US 6 159th St	IL 1 Halsted St	Harvey	CO	26
TS	156	T-1A	179th St	Wolf Rd	Orland Park	CO	27
TS	158	T-1A	IL 7 Wolf Rd	151st St	Orland Park	CO	28

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TS	159	T-1A	IL 7 Wolf Rd	153rd St	Orland Park	CO	29
TS	160	T-1A	US 6 159th St	IL 7 Wolf Rd North Junc	Orland Park	CO	30
TS	161	T-1A	US 6 Wolf Rd	US 6 173rd St South Junc	Orland Park	CO	31
TS	162	T-1A	US 6 Wolf Rd	Brookhill Dr	Orland Park	CO	32
TS	163	T-1A	IL 7 159th St	Will Cook Rd	Orland Park	CO	33
TS	165	T-1A	US 6 159th St	IL 43 Harlem Ave	Orland Park	CO	34
TS	170	T-1A	US 6 159th St	IL 50 Cicero Ave	Oak Forest	CO	35
TS	180	T-1A	US 6 159th St	76th Ave	Tinley Park	CO	36
TS	185	T-1A	US 6 159th St	80th Ave	Orland Park	CO	37
TS	190	T-1A	US 6 159th St	94th St	Orland Park	CO	38
TS	200	T-1A	US 6 159th St	Carse Ave	South Holland	CO	39
TS	205	T-1A	US 6 159th St	Central Ave	Oak Forest	CO	40
TS	210	T-1A	US 6 159th St	Cottage Grove Ave	South Holland	CO	41
TS	215	T-1A	US 6 159th St	Crawford Ave Pukaski Rd	Markham	CO	42
TS	225	T-1A	US 6 159th St	Ellis Ave	South Holland	CO	43
TS	235	T-1A	US 6 159th St	71st Ct	Orland Pk/Tinley Pk	CO	44
TS	240	T-1A	US 6 159th St	84th Ave	Tinley Park	CO	45
TS	245	T-1A	US 6 159th St	Kedzie Ave	Markham	CO	46
TS	265	T-1A	US 6 159th St	Parkway The Park	Calumet City	CO	47
TS	270	T-1A	US 6 159th St	Paxton Ave	Calumet City	CO	48
TS	275	T-1A	US 6 159th St	Ridgeland Ave	Oak Forest	CO	49
TS	285	T-1A	US 6 159th St	School St	South Holland	CO	50
TS	290	T-1A	US 6 159th St	South Park Ave Chicago Rd	South Holland	CO	51
TS	293	T-1A	US 6 159th St	Wausau Ave	South Holland	CO	52
TS	295	T-1A	US 6 159th St	State St Indiana Ave	South Holland	CO	53
TS	300	T-1A	US 6 159th St	Thornton Blue Island Rd	South Holland	CO	54
TS	305	T-1A	US 6 159th St	Van Dam Rd	South Holland	CO	55
TS	310	T-1A	US 6 159th St	Vincennes Ave Van Bruen St	South Holland	CO	56
TS	315	T-1A	US 6 159th St	Wood St	Harvey	CO	57
TS	320	T-1A	US 6 159th St	Woodlawn East Ave	South Holland	CO	58
TS	325	T-1A	US 6 159th St	Laramie Ave	Oak Forest	CO	59
TS	326	T-1A	US 14 Dempster St	IL 21 Milwaukee Ave	Niles/Morton Grove	CO	60
TS	330	T-1A	US 6 159th St	88th Ave	Orland Pk/Westhaven	CO	61
TS	350	T-1A	US 6 IL 83 Torrence Ave	River Oaks Center Entr	Calumet City	CO	62
TS	365	T-1A	US 12 Rand Rd	US 12 45 DesPlaines River Rd	Des Plaines	CO	63
TS	370	T-1A	US 12 Rand Rd	US 12 Elk Blvd	Des Plaines	CO	64
TS	375	T-1A	US 12 Rand Rd	IL 58 Golf Rd	Des Plaines	CO	65
TS	380	T-1A	US 12 Rand Rd	IL 83 Elmhurst Rd and	Mt Prospect	CO	66

				Foundry Rd			
TS	385	T-1A	US 12 Rand Rd	Baldwin Rd Williams Dr	Palatine	CO	67
TS	390	T-1A	US 12 Rand Rd	Camp McDonald Rd	Mt Prospect	CO	68
TS	392	T-1A	US 12 Rand Rd	Schoenbeck Rd	Mt Prospect	CO	69
TS	395	T-1A	US 12 Rand Rd	Euclid Ave	Mt Prospect	CO	70
TS	400	T-1A	US 12 Rand Rd	Hintz Rd	Arlington Heights	CO	71
TS	405	T-1A	US 12 Rand Rd	Kennicott Dr	Arlington Heights	CO	72
TS	410	T-1A	US 12 Rand Rd	Lake Cook Rd	Palatine	CO	73
TS	415	T-1A	US 12 Rand Rd	Clarence Ave Dryden Ave	Arlington Heights	CO	74
TS	419	T-1A	US 12 Rand Rd	Olive Ave	Prospect Heights	CO	75
TS	420	T-1A	US 12 Rand Rd	Thomas Ave Willow Rd	Mt Prospect Arlington Hts	CO	76
TS	421	T-1A	US 12 Rand Rd	Beverly Rd	Arlington Heights	CO	77
TS	425	T-1A	US 12 Rand Rd	Wolf Rd	Des Plaines	CO	78
TS	427	T-1A	I-294 Ramp B	US 12 20 95th St	Oak Lawn	CO	79
TS	430	T-1A	US 12 20 95th St	US 12 20 45 LaGrange Rd	Hickory Hills	CO	80
TS	435	T-1A	US 12 20 95th St	IL 50 Cicero Ave	Oak Lawn	CO	81
TS	440	T-1A	US 12 20 95th St	52nd Ave	Oak Lawn	CO	82
TS	445	T-1A	US 12 20 95th St	54th Ave	Evergreen Pk/ Oak Lawn	CO	83
TS	450	T-1A	US 12 20 95th St	78 th Ave	Hickory Hills	CO	84
TS	460	T-1A	US 12 20 95th St	Campbell Ave	Evergreen Park	CO	85
TS	465	T-1A	US 12 20 95th St	Central Ave	Oak Lawn	CO	86
TS	470	T-1A	US 12 20 95th St	Chicago Ridge Mall Drive Ent B	Chicago Ridge	CO	87
TS	475	T-1A	US 12 20 95th St	Cook Ave	Oak Lawn	CO	88
TS	480	T-1A	US 12 20 95th St	Crawford Ave Pukaski Rd	Evergreen Park	CO	89
TS	481	T-1A	US 12 20 95th St	Keeler Ave	Oak Lawn	CO	90
TS	485	T-1A	US 12 20 95th St	Kedzie Ave	Evergreen Park	CO	91
TS	495	T-1A	US 12 20 95th St	K Mart Shopping Center	Oak Lawn	CO	92
TS	500	T-1A	US 12 20 95th St	Millard Ave	Evergreen Park	CO	93
TS	502	T-1A	US 20 Lake St	Naperville Rd	Bartlett	CO	94
TS	503	T-1A	US 20 Lake St	Lambert Rose Ln	Elgin	CO	95
TS	505	T-1A	US 12 20 95th St	Chicago Ridge Mall Drive Entrance A Nashville Ave	Chicago Ridge	CO	96
TS	510	T-1A	US 12 20 95th St	Oak Park Ave	Oak Lawn	CO	97
TS	515	T-1A	US 12 20 95th St	Melvina Ave	Oak Lawn	CO	98
TS	520	T-1A	US 12 20 95th St	Ridgeland Ave	Oak Lawn	CO	99
TS	525	T-1A	US 12 20 95th St	Roberts Rd	Hickory Hills	CO	100
TS	530	T-1A	US 12 20 95th St	IL 7 Southwest Hwy	Oak Lawn	CO	101
TS	535	T-1A	US 12 20 95th St	Western Ave	Evergreen Park	CO	102

TS	537	T-1A	Western Ave	92nd Pl	Evergreen Park	CO	103
TS	540	T-1A	US 12 20 95th St	Homan Ave	Evergreen Park	CO	104
TS	741	T-1A	IL 19 Irving Park Rd	Shales Pkwy	Elgin	CO	105
TS	742	T-1A	IL 19 Irving Park Rd	Poplar Creek Dr	Elgin	CO	106
TS	743	T-1A	IL 19 Irving Park Rd	Rohrsen Rd	Elgin	CO	107
TS	744	T-1A	IL 19 Irving Park Rd	Schaumburg Rd	Streamwood	CO	108
TS	747	T-1A	IL 58 Summit St	Shales Pkwy Countryfield Rd	Elgin	CO	109
TS	1007	T-1A	123rd St McCarthy Rd	Will Cook Rd	Lemont	CO	110
TS	1008	T-1A	124th St McCarthy Rd	Walker Rd	Lemont	CO	111
TS	1009	T-1A	123rd St McCarthy Rd	Bell Rd	Lemont	CO	112
TS	1010	T-1A	US 12 20 45 Mannheim Rd	US 20 Lake St	Melrose Park	CO	113
TS	1011	T-1A	123rd St McCarthy Rd	Wolf Rd	Palos Park	CO	114
TS	1015	T-1A	US 12 20 45 Mannheim Rd	IL 38 Roosevelt Rd	Westchester	CO	115
TS	1020	T-1A	US 12 20 45 Mannheim Rd	Washington Blvd	Bellwood	CO	116
TS	1022	T-1A	US 20 Lake St	IL 59 North Ramp	Bartlett	CO	117
TS	1023	T-1A	US 20 Lake St	IL 59 South Ramp	Bartlett	CO	118
TS	1025	T-1A	US 12 20 45 LaGrange Rd	31st St	LaGrange Park	CO	119
TS	1030	T-1A	US 12 20 45 LaGrange Rd	47th St	LaGrange	CO	120
TS	1035	T-1A	US 12 20 45 LaGrange Rd	55th St	Countryside	CO	121
TS	1040	T-1A	US 12 20 45 LaGrange Rd	67th St	Hodgkins	CO	122
TS	1045	T-1A	US 12 20 45 LaGrange Rd	87th St	Willow Springs	CO	123
TS	1050	T-1A	US 12 20 45 LaGrange Rd	Cermak Rd	Westchester	CO	124
TS	1065	T-1A	US 12 20 45 LaGrange Rd	Plainfield Rd	Countryside	CO	125
TS	1070	T-1A	US 12 20 45 Mannheim Rd	Randolph St	Bellwood	CO	126
TS	1075	T-1A	US 12 20 45 Mannheim Rd	St Charles Rd	Bellwood	CO	127
TS	1080	T-1A	US 12 20 45 Mannheim Rd	Madison St	Hillside	CO	128
TS	1085	T-1A	US 12 45 Lee St	US 45 DesPlaines River Rd	Des Plaines	CO	129
TS	1090	T-1A	US 12 45 Elk Blvd	US 45 DesPlaines River Rd	Des Plaines	CO	130
TS	1105	T-1A	US 12 45 Mannheim Rd	Armitage Ave	Franklin Park	CO	131
TS	1110	T-1A	US 12 45 Mannheim Rd	Fullerton Ave	Franklin Park	CO	132
TS	1114	T-1A	US 12 45 Mannheim Rd	Wrightwood Ave	Franklin Park	CO	133
TS	1115	T-1A	US 12 45 Mannheim Rd	Melrose Crossing N Entrance	Melrose Park	CO	134
TS	1120	T-1A	US 12 45 Mannheim Rd	Melrose Crossing S Entrance	Melrose Park	CO	135
TS	1130	T-1A	US 12 45 Lee St	Oakton St	Des Plaines	CO	136
TS	1135	T-1A	US 12 45 Mannheim Rd	Touhy Ave	Des Plaines	CO	137
TS	1137	T-1A	US 12 45 Mannheim Rd	Lunt Ave	Des Plaines	CO	138
TS	1140	T-1A	US 12 45 Mannheim Rd	United Pkwy	Schiller Park	CO	139
TS	1150	T-1A	US 12 IL 53 Rand Rd	IL 53 Hicks Rd	Palatine	CO	140
TS	1155	T-1A	US 12 IL 53 Rand Rd	IL 53 IL 68 Dundee Rd	Palatine	CO	141

TS	1157	T-1A	IL 68 Dundee Rd	Lynda Dr Access Dr	Palatine	CO	142
TS	1160	T-1A	US 12 IL 53 Rand Rd	Old Hicks Rd Coach Rd	Palatine	CO	143
TS	1165	T-1A	US 14 IL 58 Dempster St	US 14 IL 43 Waukegan Rd	Morton Grove	CO	144
TS	1170	T-1A	US 14 Northwest Hwy	US 14 Baldwin	Barrington	CO	145
TS	1172	T-1A	US 14 Northwest Hwy	Sterling Ave	Palatine	CO	146
TS	1175	T-1A	US 14 Caldwell Ave	US 14 IL 43 Waukegan Rd	Morton Grove	CO	147
TS	1180	T-1A	US 14 Northwest Hwy	IL 53 East Ramp	Palatine	CO	148
TS	1185	T-1A	US 14 Northwest Hwy	IL 53 West Ramp	Palatine	CO	149
TS	1200	T-1A	US 14 Dempster St	Cumberland Ave	Niles	CO	150
TS	1205	T-1A	US 14 Dempster St	Dee Rd	Park Ridge	CO	151
TS	1210	T-1A	US 14 Dempster St	Greenwood Ave	Park Ridge	CO	152
TS	1213	T-1A	US 14 Dempster St	Western Ave	Park Ridge	CO	153
TS	1215	T-1A	US 14 Caldwell Ave	Gross Point Rd	Niles	CO	154
TS	1225	T-1A	US 14 Northwest Hwy	Hicks Rd S Jct	Palatine	CO	155
TS	1230	T-1A	US 14 Caldwell Ave	Howard St	Niles	CO	156
TS	1240	T-1A	US 14 Dempster St	Luther Ln	Park Ridge	CO	157
TS	1245	T-1A	US 14 Northwest Hwy	Lake Cook Rd	Barrington	CO	158
TS	1250	T-1A	US 14 Northwest Hwy	US Post Office	Palatine	CO	159
TS	1255	T-1A	US 14 Northwest Hwy	Mt Prospect Rd	Mt Prospect	CO	160
TS	1260	T-1A	US 14 Caldwell Ave	Oakton St	Niles	CO	161
TS	1265	T-1A	US 14 Dempster St	Ozark Concrete	Niles/Morton Grove	CO	162
TS	1270	T-1A	US 14 Northwest Hwy	Palatine Rd	Palatine	CO	163
TS	1275	T-1A	US 14 Dempster St	Potter Rd	Park Ridge	CO	164
TS	1280	T-1A	US 14 Baldwin Rd	Quentin Rd	Palatine	CO	165
TS	1285	T-1A	US 14 Dempster St	Rand Rd	Des Plaines	CO	166
TS	1290	T-1A	US 14 Northwest Hwy	Rohlwing Rd	Palatine	CO	167
TS	1305	T-1A	US 14 Caldwell Ave	Touhy Ave	Niles/Park ridge	CO	168
TS	1320	T-1A	US 20 Lake St	Bluff City Rd Lovell Rd	Elgin	CO	169
TS	1325	T-1A	US 20 Lake St	Oak St	Bartlett	CO	170
TS	1330	T-1A	US 20 Lake St	Park St	Bartlett	CO	171
TS	1335	T-1A	US 20 Lake St	44th St	Melrose Park	CO	172
TS	1345	T-1A	US 30 Lincoln Hwy	IL 1 Chicago Ave	Chicago Heights	CO	173
TS	1350	T-1A	US 30 Lincoln Hwy	IL 43 Harlem Ave	Matteson/Frankfort	CO	174
TS	1355	T-1A	US 30 Lincoln Hwy	IL 50 Cicero Ave	Matteson	CO	175
TS	1357	T-1A	IL 50 Cicero Ave	207th St Birchwood Dr	Matteson	CO	176
TS	1358	T-1A	IL 50 Cicero Ave	Morning Glory Village Commons	Matteson	CO	177
TS	1365	T-1A	US 30 Lincoln Hwy	Division St	Chicago Heights	CO	178
TS	1375	T-1A	US 30 Lincoln Hwy	Governers Hwy Crawford Ave	Matteson	CO	179
TS	1376	T-1A	Governors Hwy	212th Pl	Matteson	CO	180
TS	1380	T-1A	US 30 Lincoln Hwy	Halsted St	Chicago Heights	CO	181

TS	1385	T-1A	US 30 Lincoln Hwy	Main St	Matteson	CO	182
TS	1390	T-1A	US 30 Lincoln Hwy	Olympian Way	Olympia Fields	CO	183
TS	1395	T-1A	US 30 Lincoln Hwy	Orchard Rd	Park Forest	CO	184
TS	1400	T-1A	US 30 Lincoln Hwy	Ridgeland Ave	Matteson	CO	185
TS	1410	T-1A	US 30 Lincoln Hwy	State St	Chicago Heights	CO	186
TS	1414	T-1A	US 30 Lincoln Hwy	Center Ave	Chicago Heights	CO	187
TS	1420	T-1A	US 30 Lincoln Hwy	Western Ave	Olympia Fields	CO	188
TS	1430	T-1A	US 30 Lincoln Hwy	LindenWood Dr Lincoln Mall	Matteson	CO	189
TS	1435	T-1A	US 30 Lincoln Hwy	Ashland Ave	Chicago Heights	CO	190
TS	1440	T-1A	US 30 Lincoln Hwy	Brookwood Dr	Olympia Fields	CO	191
TS	1445	T-1A	US 30 Lincoln Hwy	Hilltop Ave	Chicago Heights	CO	192
TS	1450	T-1A	US 30 Lincoln Hwy	Kostner Ave	Matteson	CO	193
TS	1455	T-1A	US 34 Ogden Ave	IL 43 Harlem Ave	Lyons	CO	194
TS	1460	T-1A	US 34 Ogden Ave	39th St Miller Rd	Lyons	CO	195
TS	1465	T-1A	US 34 Ogden Ave	Gilbert Ave Willow Springs Rd	LaGrange Park	CO	196
TS	1470	T-1A	US 34 Ogden Ave	Joliet Rd	Lyons	CO	197
TS	1480	T-1A	US 34 Ogden Ave	Wolf Rd	Western Springs	CO	198
TS	1485	T-1A	US 41 IL 50 Cicero Ave	US 41 Lincoln Ave	Skokie	CO	199
TS	1490	T-1A	US 41 Skokie Blvd	IL 58 Dempster St	Skokie	CO	200
TS	1495	T-1A	US 41 Skokie Blvd	Church St	Skokie	CO	201
TS	1503	T-1A	Touhy Ave	St Louis Ave	Lincolnwood	CO	202
TS	1505	T-1A	US 41 Lincoln Ave	Devon Ave	Lincolnwood	CO	203
TS	1510	T-1A	US 41 Skokie Blvd	East Lake Ave	Wilmette	CO	204
TS	1515	T-1A	US 41 Skokie Blvd	Edens Plaza	Skokie	CO	205
TS	1520	T-1A	US 41 Skokie Blvd	Emerson Ave	Skokie	CO	206
TS	1525	T-1A	US 41 Skokie Hwy	Golf Rd	Skokie	CO	207
TS	1530	T-1A	US 41 Skokie Blvd	Gross Point Rd	Skokie	CO	208
TS	1535	T-1A	US 41 Skokie Hwy	Hibbard Rd	Wilmette	CO	209
TS	1540	T-1A	US 41 Skokie Blvd	Howard St	Skokie	CO	210
TS	1545	T-1A	US 41 Lincoln Ave	Kostner ave	Lincolnwood	CO	211
TS	1555	T-1A	US 41 Skokie Hwy	Foster Ave	Skokie	CO	212
TS	1560	T-1A	US 41 Skokie Blvd	Main St	Skokie	CO	213
TS	1565	T-1A	US 41 Skokie Blvd	New Glenview Rd	Wilmette	CO	214
TS	1574	T-1A	Niles Center Rd	Fargo Ave	Skokie	CO	215
TS	1575	T-1A	US 41 Skokie Hwy	Oakton St	Skokie	CO	216
TS	1577	T-1A	US 41 Skokie Hwy	Searle Pkwy	Skokie	CO	217
TS	1580	T-1A	US 41 Skokie Blvd	Old Glenview Rd	Wilmette	CO	218
TS	1590	T-1A	US 41 Skokie Hwy	Old Orchard Rd	Skokie	CO	219
TS	1595	T-1A	US 41 Skokie Hwy	Old Orchard S.C. North	Wilmette	CO	220
TS	1600	T-1A	US 41 Skokie Hwy	Old Orchard S.C. Center	Wilmette	CO	221
TS	1605	T-1A	US 41 Skokie Hwy	Old Orchard S.C. South	Wilmette	CO	222

TS	1615	T-1A	US 41 Lincoln Ave	Touhy Ave	Skokie/Lincolnwood	CO	223
TS	1617	T-1A	IL 72 Touhy Ave	Kilbourn Ave	Lincolnwood	CO	224
TS	1620	T-1A	US 41 Skokie Blvd	Wilmette Ave	Wilmette	CO	225
TS	1625	T-1A	US 45 DesPlaines River Rd	IL 58 Golf Rd	Palos Township	CO	226
TS	1626	T-1A	US 45 DesPlaines River Rd	Nazareth Way Holy Family	Des Plaines	CO	227
TS	1630	T-1A	US 45 LaGrange Rd	107th St	Palos	CO	228
TS	1631	T-1A	111th St	84th Ave	Palos Heights	CO	229
TS	1632	T-1A	111th St	Kean Ave	Palos Heights	CO	230
TS	1633	T-1A	107th	104th	Palos	CO	231
TS	1634	T-1A	104th Ave	95th St	Palos Tnshp	CO	232
TS	1635	T-1A	US 45 LaGrange Rd	111th St	Palos Hills	CO	233
TS	1675	T-1A	US 45 DesPlaines River Rd	Central Rd	Des Plaines	CO	234
TS	1676	T-1A	Central Rd	East River Rd	Des Plaines	CO	235
TS	1677	T-1A	Central Rd	Oakton Community College	Des Plaines	CO	236
TS	1680	T-1A	US 45 DesPlaines River Rd	Euclid St	Mt Prospect	CO	237
TS	1685	T-1A	US 45 DesPlaines River Rd	Kensington Rd Foundry St	Mt Prospect	CO	238
TS	1690	T-1A	US 45 LaGrange Rd	McCarthy Rd 123rd St	Palos Park	CO	239
TS	1695	T-1A	US 45 LaGrange Rd	Old Willow Rd Seminol Ln	Prospect Heights	CO	240
TS	1712	T-1A	US 45 DesPlaines River Rd	Camp Mc Donald Rd	Mt Prospect	CO	241
TS	1715	T-1A	US 45 IL 21 Milwaukee Ave	IL 68 Dundee Rd	Wheeling	CO	242
TS	1724	T-1A	US 45 IL 21 Milwaukee Ave	Lake Cook Rd South Ramp B&C	Wheeling	CO	243
TS	1726	T-1A	US 45 IL 21 Milwaukee Ave	Lake Cook Rd North Ramp A&D	Wheeling	CO	244
TS	1730	T-1A	US 45 IL 21 Milwaukee Ave	Wolf Rd	Wheeling	CO	245
TS	1735	T-1A	US 45 IL 21 Milwaukee Ave	Apple Dr	Prospect Heights	CO	246
TS	1740	T-1A	US 45 IL 21 Milwaukee Ave	Palatine Rd North Ramp	Prospect Heights	CO	247
TS	1745	T-1A	US 45 IL 21 Milwaukee Ave	Palatine Rd South Ramp	Prospect Heights	CO	248
TS	1760	T-1A	IL 1 Halsted St	IL 1 Vincennes Ave	Phoenix	CO	249
TS	1765	T-1A	IL 83 Sibley 147th St	IL 1 Halsted St	Harvey	CO	250
TS	1770	T-1A	IL 1 Chicago Ave	15th St	Chicago Heights	CO	251
TS	1775	T-1A	IL 1 Chicago Ave	16th St	Chicago Heights	CO	252
TS	1785	T-1A	IL 1 Halsted St	123rd St	Chicago	CO	253
TS	1790	T-1A	IL 1 Halsted St	127th St	Calumet Park	CO	254
TS	1795	T-1A	IL 1 Halsted St	138th St	Riverdale	CO	255
TS	1800	T-1A	IL 1 Halsted St	149th St	Harvey	CO	256

TS	1805	T-1A	IL 1 Halsted St	152nd St	Phoenix	CO	257
TS	1810	T-1A	IL 1 Halsted St	157th St	Harvey	CO	258
TS	1865	T-1A	IL 1 Chicago Ave	Steger Rd	Steger	CO	259
TS	1890	T-1A	IL 7 Southwest Hwy	IL 43 Harlem Ave	Worth	CO	260
TS	1895	T-1A	IL 7 Southwest Hwy	IL 83 Cal Sag 80th Ave	Palos Park	CO	261
TS	1899	T-1A	80th Ave	123rd St McCarthy Rd	Palos Park	CO	262
TS	1900	T-1A	IL 7 Southwest Hwy	111th St	Worth/Palos Hills	CO	263
TS	1903	T-1A	IL 7 Southwest Hwy	117th St	Palos Heights	CO	264
TS	1904	T-1A	IL 7 Southwest Hwy	Metra Train Station 114th Place	Palos Heights	CO	265
TS	1905	T-1A	IL 7 Southwest Hwy	131st St	Orland Park	CO	266
TS	1910	T-1A	IL 7 Southwest Hwy	135th St	Orland Park	CO	267
TS	1911	T-1A	131st St	76th Ave	Orland Park/Palos	CO	268
TS	1913	T-1A	131st St	86th Ave	Palos Hills	CO	269
TS	1915	T-1A	IL 7 Southwest Hwy	143rd St	Orland Park	CO	270
TS	1920	T-1A	IL 7 143rd St	West Ave/100th Ave	Orland Park	CO	271
TS	1925	T-1A	IL 19 Irving Park Rd	IL 43 Harlem Ave	Chicago/Norridge	CO	272
TS	1930	T-1A	IL 19 Irving Park Rd	IL 59 New Sutton Rd	Streamwood	CO	273
TS	1932	T-1A	IL 19 Irving Park Rd	Madison St	Streamwood	CO	274
TS	1935	T-1A	IL 19 Irving Park Rd	Bartlett Rd	Streamwood	CO	275
TS	1937	T-1A	IL 59	IL 59 @ Gulf Keys	Streamwood	CO	276
TS	1940	T-1A	IL 171 Cumberland	IL 19 Irving Park Rd	Chicago	CO	277
TS	1945	T-1A	IL 19 Irving Park Rd	Des Plaines River Rd	Schiller Park	CO	278
TS	1948	T-1A	US 45 DesPlaines River Rd	Ivanhoe Rd	Schiller Park	CO	279
TS	1950	T-1A	IL 19 Irving Park Rd	Forest Preserve Dr	Chicago/Norridge	CO	280
TS	1953	T-1A	IL 19 Irving Park Rd	Judd Ave	Schiller Park	CO	281
TS	1955	T-1A	IL 19 Irving Park Rd	Oriole Ave	Norridge	CO	282
TS	1957	T-1A	IL 19 Irving Park Rd	Seymour Ave	Franklin Park	CO	283
TS	1960	T-1A	IL 19 Irving Park Rd	Ruby St 25th Ave	Schiller Park	CO	284
TS	1965	T-1A	IL 19 Irving Park Rd	Springinsguth Rd	Schaumburg	CO	285
TS	1966	T-1A	I 390 EOH E Frontage	Springinsguth Rd	Schaumburg	CO	286
TS	1967	T-1A	I 390 EOH W Frontage	Springinsguth Rd	Schaumburg	CO	287
TS	1970	T-1A	IL 19 Irving Park Rd	Wesley Terr	Schiller Park	CO	288
TS	1975	T-1A	IL 19 Irving Park Rd	Wise Rd	Schaumburg	CO	289
TS	1976	T-1A	IL 19 Irving Park Rd	Mercury Dr	Schaumburg	CO	290
TS	1980	T-1A	IL 19 Irving Park Rd	Sunnydale Blvd	Streamwood	CO	291
TS	1985	T-1A	IL 19 Irving Park Rd	East Ave	Streamwood	CO	292
TS	1987	T-1A	IL 19 Irving Park Rd	Taft Ave	Chicago/Schiller Pk	CO	293
TS	1990	T-1A	IL 21 Milwaukee Ave	IL 43 Harlem	Niles	CO	294
TS	1995	T-1A	IL 21 Milwaukee Ave	IL 58 Golf Rd	Niles	CO	295
TS	2000	T-1A	IL 21 Milwaukee Ave	Ballard Rd	Niles	CO	296
TS	2005	T-1A	IL 21 Milwaukee Ave	Central Rd	Niles	CO	297

TS	2010	T-1A	IL 21 Milwaukee Ave	Dearlove Rd Glenview Rd	Glenview	CO	298
TS	2015	T-1A	IL 21 Milwaukee Ave	Greenwood Ave	Niles	CO	299
TS	2020	T-1A	IL 21 Milwaukee Ave	Howard St	Niles	CO	300
TS	2025	T-1A	IL 21 Milwaukee Ave	Main St	Niles	CO	301
TS	2030	T-1A	IL 21 Milwaukee Ave	Maryland St	Niles	CO	302
TS	2035	T-1A	IL 21 Milwaukee Ave	Oak Mill Mall	Niles	CO	303
TS	2040	T-1A	IL 21 Milwaukee Ave	Oakton St	Niles	CO	304
TS	2045	T-1A	IL 21 Milwaukee Ave	Sanders Rd	Glenview	CO	305
TS	2050	T-1A	IL 21 Milwaukee Ave	Euclid St West Lake Ave	Glenview	CO	306
TS	2055	T-1A	IL 21 Milwaukee Ave	Castillian Ct Aon Dr	Glenview	CO	307
TS	2060	T-1A	IL 21 Milwaukee Ave	Golf Mill Center Drive	Niles	CO	308
TS	2065	T-1A	IL 21 Milwaukee Ave	Golf Mill North Drive	Niles	CO	309
TS	2075	T-1A	IL 38 Roosevelt Rd	Wolf Rd	Hillside	CO	310
TS	2077	T-1A	IL 38 Roosevelt Rd	Fencl Ln	Hillside	CO	311
TS	2080	T-1A	IL 43 Harlem Ave	IL 43 Oakton St	Niles	CO	312
TS	2085	T-1A	IL 43 Waukegan Rd	IL 43 Oakton St	Niles	CO	313
TS	2087	T-1A	Oakton St	Niles Civic Center Plaza	Niles	CO	314
TS	2090	T-1A	IL 43 IL 58 Waukegan Rd	IL 58 Golf	Morton Grove	CO	315
TS	2095	T-1A	IL 43 Harlem Ave	IL 64 North Ave	Oak Park	CO	316
TS	2100	T-1A	IL 43 Waukegan Rd	IL 68 Dundee Rd	Northbrook	CO	317
TS	2105	T-1A	IL 43 Harlem Ave	IL 83 119th St College Dr	Palos Heights	CO	318
TS	2110	T-1A	IL 43 Harlem Ave	16th St	Berwyn/Forest Park	CO	319
TS	2115	T-1A	IL 43 Harlem Ave	23rd St	North Riverside	CO	320
TS	2130	T-1A	IL 43 Harlem Ave	39th St/Pershing Rd	Stickney	CO	321
TS	2135	T-1A	IL 43 Harlem Ave	47th St	Forest View	CO	322
TS	2140	T-1A	IL 43 Harlem Ave	57th St	Summit	CO	323
TS	2145	T-1A	IL 43 Harlem Ave	60th St	Summit	CO	324
TS	2150	T-1A	IL 43 Harlem Ave	63rd St	Summit	CO	325
TS	2155	T-1A	IL 43 Harlem Ave	63rd St Cut Off	Summit	CO	326
TS	2160	T-1A	IL 43 Harlem Ave	65th St	Bedford Park	CO	327
TS	2165	T-1A	IL 43 Harlem Ave	71st St	Bridgeview	CO	328
TS	2170	T-1A	IL 43 Harlem Ave	75th Pl	Bridgeview	CO	329
TS	2175	T-1A	IL 43 Harlem Ave	79th Pl	Bridgeview	CO	330
TS	2180	T-1A	IL 43 Harlem Ave	83rd St	Bridgeview	CO	331
TS	2185	T-1A	IL 43 Harlem Ave	87th St	Bridgeview	CO	332
TS	2190	T-1A	IL 43 Harlem Ave	88th St Southfield SC Dr	Bridgeview	CO	333
TS	2195	T-1A	IL 43 Harlem Ave	90th St Cambridge St	Bridgeview	CO	334
TS	2210	T-1A	IL 43 Harlem Ave	111th St	Worth	CO	335
TS	2215	T-1A	IL 43 Harlem Ave	115th St	Worth	CO	336

TS	2220	T-1A	IL 43 Harlem Ave	123rd St	Palos Heights	CO	337
TS	2225	T-1A	IL 43 Harlem Ave	127th St	Palos Heights	CO	338
TS	2226	T-1A	IL 171 Archer Ave	127th St	Lemont	CO	339
TS	2227	T-1A	IL 43 Harlem Ave	Ishnala Dr	Palos Heights	CO	340
TS	2235	T-1A	IL 43 Harlem Ave	135th St	Palos Heights	CO	341
TS	2240	T-1A	IL 43 Harlem Ave	151st St	Orland Park	CO	342
TS	2245	T-1A	IL 43 Harlem Ave	175th St	Tinley Park	CO	343
TS	2250	T-1A	IL 43 Harlem Ave	157th St	Orland Park	CO	344
TS	2255	T-1A	IL 43 Harlem Ave	183rd St	Tinley Park	CO	345
TS	2256	T-1A	183rd St	Oak Park Ave	Tinley Park	CO	346
TS	2260	T-1A	IL 43 Harlem Ave	Archer Ave 55th St	Summit	CO	347
TS	2265	T-1A	IL 43 Harlem Ave	Armitage Ave	Elmwood Park	CO	348
TS	2270	T-1A	IL 43 Harlem Ave	Augusta Blvd	Oak Park	CO	349
TS	2275	T-1A	IL 43 Harlem Ave	Bloomingdale Rd	Elmwood Park	CO	350
TS	2285	T-1A	IL 43 Waukegan Rd	Chestnut St	Glenview	CO	351
TS	2290	T-1A	IL 43 Harlem Ave	Chicago Ave	Oak Park	CO	352
TS	2295	T-1A	IL 43 Harlem Ave	Division St	Oak Park	CO	353
TS	2300	T-1A	IL 43 Waukegan Rd	East Lake Ave	Glenview	CO	354
TS	2305	T-1A	IL 43 Harlem Ave	Forest Preserve Dr	Norridge	CO	355
TS	2310	T-1A	IL 43 Harlem Ave	Foster Ave	Harwood Hts/Chicago	CO	356
TS	2315	T-1A	IL 43 Harlem Ave	Garfield Ave Harrison St	Forest Park	CO	357
TS	2325	T-1A	IL 43 Harlem Ave	Lawrence Ave	Harwood Heights	CO	358
TS	2330	T-1A	IL 43 Harlem Ave	Howard St	Niles	CO	359
TS	2335	T-1A	IL 43 Harlem Ave	92nd Pl Stanford Dr	Bridgeview	CO	360
TS	2340	T-1A	IL 43 Harlem Ave	84th St	Bridgeview	CO	361
TS	2345	T-1A	IL 43 Harlem Ave	77th St	Bridgeview	CO	362
TS	2350	T-1A	IL 43 Harlem Ave	Jackson Blvd	Forest Park/Oak Park	CO	363
TS	2355	T-1A	IL 43 Harlem Ave	41st St Joliet Rd	Stickney	CO	364
TS	2362	T-1A	Lake St	Bonnie Brae Ave	River Forest	CO	365
TS	2370	T-1A	IL 43 Harlem Ave	Madison St	Forest Park	CO	366
TS	2375	T-1A	IL 43 Harlem Ave	Montrose Ave Agatite Ave	Norridge	CO	367
TS	2377	T-1A	IL 43 Harlem Ave	Montrose Ave West	Harwood Heights	CO	368
TS	2380	T-1A	IL 43 Harlem Ave	North Blvd South Blvd	Oak Park	CO	369
TS	2385	T-1A	IL 43 Harlem Ave	Ontario St	Oak Park	CO	370
TS	2390	T-1A	IL 43 Harlem Ave	Randolph St	Forest Park	CO	371
TS	2400	T-1A	IL 38 Roosevelt Rd	Harlem Ave	Forest Park/Oak Park	CO	372
TS	2401	T-1A	IL 38 Roosevelt Rd	Lathrop Ave	Forest Park	CO	373
TS	2406	T-1A	IL 43 Waukegan Rd	Founders Rd	Northfield	CO	374
TS	2411	T-1A	IL 43 Harlem Ave	Pioneer Park Joswiak Parkwy	Niles	CO	375
TS	2415	T-1A	IL 43 Harlem Ave	Washington Blvd	Forest Park	CO	376

TS	2420	T-1A	IL 43 Harlem Ave	Wheeler Ave	Orland Park	CO	377
TS	2430	T-1A	IL 43 Harlem Ave	Wilson Ave	Harwood Heights	CO	378
TS	2435	T-1A	IL 43 Waukegan Rd	Winnetka Rd	Northfield	CO	379
TS	2443	T-1A	IL 50 Cicero Ave	34th St Access Dr	Cicero	CO	380
TS	2445	T-1A	IL 50 Cicero Ave	31st St	Cicero	CO	381
TS	2450	T-1A	IL 50 Cicero Ave	39th St Pershing Rd	Stickney	CO	382
TS	2451	T-1A	IL 50 Cicero Ave	Burbank Station	Burbank	CO	383
TS	2460	T-1A	IL 50 Cicero Ave	67th St Marquette St	Bedford Park	CO	384
TS	2465	T-1A	IL 50 Cicero Ave	73rd St State Rd	Bedford Park	CO	385
TS	2470	T-1A	IL 50 Cicero Ave	79th St	Burbank	CO	386
TS	2475	T-1A	IL 50 Cicero Ave	83rd St	Burbank	CO	387
TS	2480	T-1A	IL 50 Cicero Ave	87th St	Oak Lawn	CO	388
TS	2485	T-1A	IL 50 Cicero Ave	94th St	Oak Lawn	CO	389
TS	2490	T-1A	IL 50 Cicero Ave	99th St	Oak Lawn	CO	390
TS	2495	T-1A	IL 50 Cicero Ave	103rd St	Oak Lawn	CO	391
TS	2500	T-1A	IL 50 Cicero Ave	107th St	Oak Lawn	CO	392
TS	2505	T-1A	IL 50 Cicero Ave	110th St	Oak Lawn	CO	393
TS	2512	T-1A	111th St	Jodan Dr Laramie Ave	Oak Lawn	CO	394
TS	2520	T-1A	IL 50 Cicero Ave	115th St	Alsip	CO	395
TS	2525	T-1A	IL 50 Cicero Ave	80th St	Burbank	CO	396
TS	2530	T-1A	IL 50 Cicero Ave	91st St	Oak Lawn	CO	397
TS	2535	T-1A	IL 50 Cicero Ave	76th Pl Ford City South	Bedford Park	CO	398
TS	2545	T-1A	IL 50 Cicero Ave	75th Pl Ford City North	Bedford Park	CO	399
TS	2550	T-1A	IL 50 Cicero Ave	72nd St	Bedford Park	CO	400
TS	2555	T-1A	IL 50 Cicero Ave	122nd St	Alsip	CO	401
TS	2566	T-1A	I 294 Tri-State E Ramp	127th St	Alsip	CO	402
TS	2567	T-1A	I 294 Tri-State W Ramp	127th St	Alsip	CO	403
TS	2570	T-1A	IL 50 Cicero Ave	151st St	Oak Forest	CO	404
TS	2575	T-1A	IL 50 Cicero Ave	155th St	Oak Forest	CO	405
TS	2580	T-1A	IL 50 Cicero Ave	167th St	Oak Forest	CO	406
TS	2585	T-1A	IL 50 Cicero Ave	183rd St	Country Club Hills	CO	407
TS	2590	T-1A	IL 50 Cicero Ave	Devon Ave	Lincolnwood	CO	408
TS	2595	T-1A	IL 50 Cicero Ave	Fieldcrest Dr 166th St	Oak Forest	CO	409
TS	2600	T-1A	IL 50 Cicero Ave	Flossmoor Rd	Country Club Hills	CO	410
TS	2605	T-1A	IL 50 Cicero Ave	Pratt Ave	Lincolnwood	CO	411
TS	2610	T-1A	IL 50 Cicero Ave	Roosevelt Rd	Cicero/Chicago	CO	412
TS	2620	T-1A	IL 50 Cicero Ave	Southwest Hwy	Oak Lawn	CO	413
TS	2625	T-1A	IL 50 Cicero Ave	Touhy Ave	Lincolnwood	CO	414
TS	2630	T-1A	IL 50 Cicero Ave	Matteson Town Center Mall	Matteson	CO	415
TS	2640	T-1A	IL 50 Cicero Ave IL 83	IL 83 147th St SibleyBlvd	Midlothian	CO	416
TS	2645	T-1A	IL 50 IL 83 Cicero Ave	IL 83 Cal Sag Rd	Crestwood	CO	417

TS	2649	T-1A	IL 50 IL 83 Cicero Ave	Rivercrest East Ent	Crestwood	CO	418
TS	2650	T-1A	IL 50 IL 83 Cicero Ave	135th St	Crestwood	CO	419
TS	2660	T-1A	IL 53 IL 68 Dundee Rd	West Frontage Rd	Arlington Heights	CO	420
TS	2665	T-1A	IL 53 E Ramp	IL 62 Algonquin Rd	Rolling Meadows	CO	421
TS	2670	T-1A	IL 53 W Ramp	IL 62 Algonquin Rd	Hoffman Estates	CO	422
TS	2677	T-1A	IL 53 Hicks Rd	Lake Cook Rd	Long Grove	CO	423
TS	2685	T-1A	IL 53 IL 68 Dundee Rd	Baldwin Ct	Palatine	CO	424
TS	2700	T-1A	IL 58 Golf Rd	IL 59	Hoffman Estates	CO	425
TS	2705	T-1A	IL 58 Golf Rd	IL 62 Algonquin Rd	Arlington Heights	CO	426
TS	2707	T-1A	IL 62 Algonquin Rd	Lowes Ent	Arlington Heights	CO	427
TS	2708	T-1A	IL 62 Algonquin Rd	Market Place	Rolling Meadows	CO	428
TS	2710	T-1A	IL 58 Golf Rd	IL 72 Higgins Rd	Schaumburg	CO	429
TS	2715	T-1A	IL 58 Golf Rd	IL 83 Elmhurst Rd	Mt Prospect	CO	430
TS	2720	T-1A	IL 58 Golf Rd	Arlington Heights Rd	Arlington Heights	CO	431
TS	2730	T-1A	IL 58 Golf Rd	Bartlett Rd	Hoffman Estates	CO	432
TS	2740	T-1A	IL 58 Golf Rd	Busse Rd	Mt Prospect	CO	433
TS	2745	T-1A	IL 58 Dempster St	CTA Skokie Swift	Skokie	CO	434
TS	2750	T-1A	IL 58 Golf Rd	Dee Rd	Niles	CO	435
TS	2755	T-1A	IL 58 Golf Rd	East River Rd	Des Plaines	CO	436
TS	2760	T-1A	IL 58 Golf Rd	Gannon Dr	Hoffman Estates	CO	437
TS	2765	T-1A	IL 58 Golf Rd	Goebbert Rd	Arlington Heights	CO	438
TS	2767	T-1A	IL 58 Golf Rd	International Plaza	Arlington Heights	CO	439
TS	2770	T-1A	IL 58 Golf Rd	Gould Dr	Rolling Meadows	CO	440
TS	2775	T-1A	IL 58 Golf Rd	Greenwood Ave	Niles	CO	441
TS	2780	T-1A	IL 58 Golf Rd	Harlem Ave	Glenview	CO	442
TS	2790	T-1A	IL 58 Golf Rd	Highland Blvd	Schaumburg	CO	443
TS	2795	T-1A	IL 58 Golf Rd	Jones Rd Salem Dr	Schaumburg	CO	444
TS	2800	T-1A	IL 58 Golf Rd	Kraft Food	Glenview	CO	445
TS	2810	T-1A	IL 58 Golf Rd	Meacham Rd	Schaumburg	CO	446
TS	2815	T-1A	IL 58 Golf Rd	Wilke Rd	Rolling Meadows	CO	447
TS	2817	T-1A	IL 58 Golf Rd	Continental Towers Walmart	Rolling Meadows	CO	448
TS	2825	T-1A	IL 58 Golf Rd	Oakton Community College	Des Plaines	CO	449
TS	2830	T-1A	IL 58 Golf Rd	Plum Grove Rd	Schaumburg	CO	450
TS	2835	T-1A	IL 58 Golf Rd	Potter Rd	Des Plaines	CO	451
TS	2840	T-1A	IL 58 Golf Rd	Roselle Rd	Schaumburg	CO	452
TS	2845	T-1A	IL 58 Golf Rd	Shermer Rd	Morton Grove	CO	453
TS	2850	T-1A	IL 58 Golf Rd	Washington St	Niles	CO	454
TS	2855	T-1A	IL 58 Golf Rd	Western Ave	Niles	CO	455
TS	2860	T-1A	IL 58 Golf Rd	3 Com Ent Apollo Dr	Rolling Meadows	CO	456
TS	2865	T-1A	IL 58 Golf Rd	Wolf Rd Segers Rd	Des Plaines	CO	457
TS	2870	T-1A	IL 58 Golf Rd	Moon Lake Rd Walnut Ln	Hoffman Estates	CO	458

TS	2875	T-1A	IL 58 Golf Rd	Meier Rd	Arlington Heights	CO	459
TS	2880	T-1A	IL 58 Golf Rd	Valley Lake Rd	Schaumburg	CO	460
TS	2885	T-1A	IL 58 Golf Rd	Four Flags Shopping Center	Niles	CO	461
TS	2890	T-1A	Hawthorne Sutton Rd	IL 68 Dundee	Barrington Hills	CO	462
TS	2892	T-1A	IL 59 New Sutton Rd	Bartlett Rd	Barrington Hills	CO	463
TS	2895	T-1A	IL 59	IL 72 Higgins Rd	Hoffman Estates	CO	464
TS	2897	T-1A	IL 59 New Sutton Rd	Penny Rd	Barrington Hills	CO	465
TS	2899	T-1A	IL 59	Arboretum Blvd	South Barrington	CO	466
TS	2900	T-1A	IL 59 Hough Rd	Barrington Rd	Barrington	CO	467
TS	2905	T-1A	IL 59 Hough Rd	Hillside Ave	Barrington	CO	468
TS	2910	T-1A	IL 59 Sutton Rd	Schaumburg Rd	Streamwood	CO	469
TS	2915	T-1A	IL 59 IL 68 Sutton Rd	IL 62 Algonquin Rd IL 68 Dundee Rd	Barrington Hills	CO	470
TS	2920	T-1A	IL 62 Algonquin Rd	IL 68 Dundee Brinker Rd	Barrington Hills	CO	471
TS	2922	T-1A	IL 62 Algonquin Rd	Palatine Rd	Barrington Hills	CO	472
TS	2925	T-1A	IL 62 Algonquin Rd	IL 83 Elmhurst Rd	Mt Prospect	CO	473
TS	2930	T-1A	IL 62 Algonquin Rd	Arbor Dr	Rolling Meadows	CO	474
TS	2935	T-1A	IL 62 Algonquin Rd	Arlington Heights Rd	Arlington Heights	CO	475
TS	2936	T-1A	IL 62 Algonquin Rd	95 West Raddison Ent Marriot Ent	Arlington Heights	CO	476
TS	2938	T-1A	I 90 Tollway N Ramp A	Arlington Heights Rd	Elk Grove	CO	477
TS	2939	T-1A	I 90 Tollway S Ramp G	Arlington Heights Rd	Elk Grove	CO	478
TS	2940	T-1A	IL 62 Algonquin Rd	Barrington Rd	South Barrington	CO	479
TS	2945	T-1A	IL 62 Algonquin Rd	Busse Rd	Mt Prospect	CO	480
TS	2950	T-1A	IL 62 Algonquin Rd	Dempster St	Mt Prospect	CO	481
TS	2955	T-1A	IL 62 Algonquin Rd	Ela Rd	Hoffman Estates	CO	482
TS	2957	T-1A	IL 62 Algonquin Rd	Winston Dr	South Barrington	CO	483
TS	2960	T-1A	IL 62 Algonquin Rd	Freeman Rd Huntington Blvd	Hoffman Estates	CO	484
TS	2965	T-1A	IL 62 Algonquin Rd	Goebbert Rd	Arlington Heights	CO	485
TS	2966	T-1A	IL 62 Algonquin Rd	Tonne Rd	Arlington Heights	CO	486
TS	2967	T-1A	IL 62 Algonquin Rd	Meijer Ent Pappa Deux Ent	Arlington Heights	CO	487
TS	2970	T-1A	IL 62 Algonquin Rd	Harper College Ent	Palatine	CO	488
TS	2975	T-1A	IL 62 Algonquin Rd	Linneman Rd	Elk Grove	CO	489
TS	2980	T-1A	IL 62 Algonquin Rd	Magnolia Dr Commerce Rd	Rolling Meadows	CO	490
TS	2985	T-1A	IL 62 Algonquin Rd	New Wilke Rd	Rolling Meadows	CO	491
TS	2990	T-1A	IL 62 Algonquin Rd	Roselle Rd	Palatine	CO	492
TS	2995	T-1A	IL 64 North Ave	IL 171	River Grove	CO	493
TS	3000	T-1A	IL 64 North Ave	5th Ave	River Grove	CO	494
TS	3005	T-1A	IL 64 North Ave	7th Ave	Melrose Park	CO	495
TS	3010	T-1A	IL 64 North Ave	9th Ave	Melrose Park	CO	496

TS	3015	T-1A	IL 64 North Ave	19th Ave Broadway St	Melrose Park	CO	497
TS	3030	T-1A	IL 64 North Ave	Austin Blvd	Oak Park	CO	498
TS	3040	T-1A	IL 64 North Ave	George St	Melrose Park	CO	499
TS	3055	T-1A	IL 64 North Ave	Narragansett Ave Edner Ave	Oak Park	CO	500
TS	3060	T-1A	IL 64 North Ave	Natoma Ave Columbian Ave	Oak Park	CO	501
TS	3070	T-1A	IL 64 North Ave	Oak Park Ave	Oak Park	CO	502
TS	3080	T-1A	IL 64 North Ave	Ridgeland Ave Mobile Ent	Oak Park	CO	503
TS	3083	T-1A	IL 64 North Ave	Roy St	Northlake	CO	504
TS	3095	T-1A	IL 68 Dundee Rd	IL 83 Elmhurst Rd	Wheeling	CO	505
TS	3105	T-1A	IL 68 Dundee Rd	Barrington Rd	Barrington	CO	506
TS	3110	T-1A	IL 68 Dundee Rd	Buffalo Grove Rd	Buffalo Grove	CO	507
TS	3112	T-1A	IL 68 Dundee Rd	Buffalo Grove High School	Buffalo Grove	CO	508
TS	3115	T-1A	IL 68 Dundee Rd	Charlemagne Dr Torre Pines	Northbrook	CO	509
TS	3120	T-1A	IL 68 Dundee Rd	Hicks Rd	Palatine	CO	510
TS	3122	T-1A	IL 68 Dundee Rd	Denise Dr Deergrove	Palatine	CO	511
TS	3125	T-1A	IL 68 Dundee Rd	Huehl Rd	Northbrook	CO	512
TS	3130	T-1A	IL 68 Dundee Rd	Kennicott Ave	Arlington Heights	CO	513
TS	3135	T-1A	IL 68 Dundee Rd	Landwehr Rd	Northbrook	CO	514
TS	3137	T-1A	IL 68 Dundee Rd	Anthony Trail	Northbrook	CO	515
TS	3145	T-1A	IL 68 Dundee Rd	Old McHenry Rd Wheeling Rd	Wheeling	CO	516
TS	3150	T-1A	IL 68 Dundee Rd	Ridge Ave	Arlington Heights	CO	517
TS	3155	T-1A	IL 68 Dundee Rd	Golfview Terrace	Buffalo Grove	CO	518
TS	3160	T-1A	IL 68 Dundee Rd	Pfingsten Rd	Northbrook	CO	519
TS	3165	T-1A	IL 68 Dundee Rd	Quentin Rd	Palatine	CO	520
TS	3168	T-1A	IL 68 Dundee Rd	Sterling Ave	Palatine	CO	521
TS	3170	T-1A	IL 68 Dundee Rd	Sanders Rd	Northbrook	CO	522
TS	3175	T-1A	IL 68 Dundee Rd	Schoenbeck Rd	Wheeling	CO	523
TS	3180	T-1A	IL 68 Dundee Rd	Shermer Rd	Northbrook	CO	524
TS	3190	T-1A	IL 68 Dundee Rd	Smith Rd	Palatine	CO	525
TS	3195	T-1A	IL 68 Dundee Rd	Western Ave	Northbrook	CO	526
TS	3200	T-1A	IL 68 Dundee Rd	Wolf Rd	Wheeling	CO	527
TS	3205	T-1A	IL 68 Dundee Rd	Wilke Rd East Frontage Rd	Arlington Heights	CO	528
TS	3210	T-1A	IL 68 Dundee Rd	Weidner Rd Crofton Ln	Buffalo Grove	CO	529
TS	3213	T-1A	IL 68 Dundee Rd	Buffalo Grove Fire House	Buffalo Grove	CO	530
TS	3220	T-1A	IL 72 Higgins Rd	Mall Dr	Schaumburg	CO	531
TS	3225	T-1A	IL 72 Higgins Rd	Martingale Rd	Schaumburg	CO	532
TS	3230	T-1A	IL 72 Higgins Rd	Meacham Rd	Schaumburg	CO	533
TS	3235	T-1A	IL 72 Higgins Rd	Mt Prospect Rd	Des Plaines	CO	534

TS	3240	T-1A	IL 72 Higgins Rd	Oakton St West	Elk Grove	CO	535
TS	3245	T-1A	IL 72 Higgins Rd	Plum Grove Rd	Schaumburg	CO	536
TS	3250	T-1A	IL 72 Higgins Rd	Roselle Rd	Hoffman Estates	CO	537
TS	3251	T-1A	IL 72 Higgins Rd	Ash Rd	Hoffman Estates	CO	538
TS	3255	T-1A	IL 72 Higgins Rd	Salem Dr	Schaumburg	CO	539
TS	3260	T-1A	IL 72 Touhy Ave	Wolf Rd	Des Plaines	CO	540
TS	3262	T-1A	IL 72 Higgins Rd	I 90 Tollwaay WB Exit	Cichago	CO	541
TS	3265	T-1A	IL 72 Higgins Rd	O'Hare Plaza Entrance 2	Park Ridge	CO	542
TS	3270	T-1A	IL 72 Touhy Ave	IL 72 Lee St	Des Plaines	CO	543
TS	3275	T-1A	IL 72 Higgins Rd	IL 72 IL 83 Oakton East	Elk Grove	CO	544
TS	3280	T-1A	Busse Hwy	Oakton St	Park Ridge	CO	545
TS	3285	T-1A	IL 72 Higgins Rd	Arlington Heights Rd	Elk Grove	CO	546
TS	3290	T-1A	IL 72 Higgins Rd	Barrington Rd	Hoffman Estates	CO	547
TS	3295	T-1A	IL 72 Higgins Rd	Bartlett Rd	Hoffman Estates	CO	548
TS	3297	T-1A	IL 72 Higgins Rd	Arboretum Blvd	South Barrington	CO	549
TS	3300	T-1A	IL 72 Higgins Rd	Canfield Rd	Park Ridge	CO	550
TS	3305	T-1A	IL 72 Higgins Rd	IL 171 Cumberland	Chicago	CO	551
TS	3310	T-1A	IL 72 Higgins Rd	Dee Rd East River Rd	Park Ridge	CO	552
TS	3325	T-1A	IL 72 Higgins Rd	Gannon Dr	Hoffman Estates	CO	553
TS	3330	T-1A	IL 72 Higgins Rd	Governors Dr Moon Lake Blvd	Hoffman Estates	CO	554
TS	3335	T-1A	IL 72 Higgins Rd	King Rd Stanley St	Elk Grove	CO	555
TS	3340	T-1A	IL 72 Higgins Rd	Beverly Rd	Hoffman Estates	CO	556
TS	3345	T-1A	IL 83 Torrence Ave	IL 83 Glenwood Dyer	Lynwood	CO	557
TS	3355	T-1A	IL 83 Elmhurst Rd	IL 83 Old McHenry Rd	Wheeling	CO	558
TS	3360	T-1A	IL 83 Cal Sag Rd	104th Ave	Palos Heights	CO	559
TS	3365	T-1A	IL 83 IL 171 N Cal Sag North	107th St	Lemont	CO	560
TS	3370	T-1A	IL 83 IL 171 S Cal Sag South	111th St	Lemont	CO	561
TS	3375	T-1A	IL 83 Cal Sag Rd	127th St	Alsip	CO	562
TS	3385	T-1A	IL 83 Sibley Blvd 147th St	Broadway St	Harvey	CO	563
TS	3390	T-1A	IL 83 Elmhurst Rd	Camp McDonald Rd	Mt Prospect	CO	564
TS	3395	T-1A	IL 83 Sibley Blvd 147th St	Chicago Rd	Dolton	CO	565
TS	3400	T-1A	IL 83 Sibley Blvd 147th St	Crawford Ave	Midlothian	CO	566
TS	3405	T-1A	IL 83 Elmhurst Rd	Dempster St Thacker Ave	Des Plaines	CO	567
TS	3420	T-1A	IL 83 Elmhurst Rd	Euclid Ave	Mt Prospect	CO	568
TS	3425	T-1A	IL 83 Busse Rd	Greenleaf Ave	Elk Grove	CO	569
TS	3435	T-1A	IL 83 Sibley Blvd 147th St	Homan Ave	Midlothian	CO	570
TS	3440	T-1A	IL 83 Sibley Blvd 147th St	Indiana Ave	South Holland	CO	571
TS	3445	T-1A	IL 83 Sibley Blvd 147th St	Keeler Ave	Midlothian	CO	572
TS	3455	T-1A	IL 83 Sibley Blvd 147th St	Kilbourn Ave	Midlothian	CO	573

TS	3460	T-1A	IL 83 Busse Rd	Landmeier Rd	Elk Grove	CO	574
TS	3465	T-1A	IL 83 Sibley Blvd 147th St	LaSalle St Markham Dr	Dolton	CO	575
TS	3470	T-1A	IL 83 Sibley Blvd 147th St	Loomis St	Harvey	CO	576
TS	3475	T-1A	IL 83 Sibley Blvd 147th St	Michigan City Rd Lincoln Ave	Dolton	CO	577
TS	3485	T-1A	IL 83 Elmhurst Rd	Palatine Rd	Prospect Heights	CO	578
TS	3490	T-1A	IL 83 Busse Rd	Pratt Rd	Elk Grove	CO	579
TS	3495	T-1A	IL 83 Torrence Ave	Ridge Rd	Lansing	CO	580
TS	3505	T-1A	IL 83 Cal Sag Rd	Ridgeland Ave	Palos Heights	CO	581
TS	3510	T-1A	IL 83 Sibley Blvd 147th St	Robey St	Harvey	CO	582
TS	3520	T-1A	IL 83 Sibley Blvd 147th St	Wood St	Harvey	CO	583
TS	3525	T-1A	IL 83 Sibley Blvd 147th St	Wallace St	Harvey	CO	584
TS	3530	T-1A	IL 83 Cal Sag Rd	119th St	Palos Park	CO	585
TS	3532	T-1A	IL 83 Cal Sag Rd	76th Ave	Palos Heights	CO	586
TS	3535	T-1A	IL 83 Elmhurst Rd	Huntington Commons	Mt Prospect	CO	587
TS	3540	T-1A	IL 83 Elmhurst Rd	Willow Rd	Prospect Heights	CO	588
TS	3545	T-1A	IL 171 Archer Ave	63rd St	Summit	CO	589
TS	3550	T-1A	IL 171 1st Ave E Ramp	Joliet Rd	McCook	CO	590
TS	3555	T-1A	IL 171 Archer Ave	55th St	Summit	CO	591
TS	3557	T-1A	IL 171 Archer Ave	59th St	Summit	CO	592
TS	3560	T-1A	IL 171 Archer Ave	Roberts Rd	Bedford Park	CO	593
TS	3565	T-1A	IL 171 Archer Ave	State St	Lemont	CO	594
TS	3567	T-1A	IL 171 Archer Ave	Access Dr Target Ent	Lemont	CO	595
TS	3572	T-1A	IL 171 Archer Ave	Nolton Ave	Willow Springs	CO	596
TS	3573	T-1A	Willow Springs Rd	German Church Rd	Willow Springs	CO	597
TS	3585	T-1A	IL 171 1st Ave	26th St	North Riverside	CO	598
TS	3595	T-1A	IL 171 1st Ave	31st St Cutoff Golfview	North Riverside	CO	599
TS	3600	T-1A	IL 171 1st Ave	Cermak Rd	North Riverside	CO	600
TS	3605	T-1A	IL 171 1st Ave	Cermak Cut off	North Riverside	CO	601
TS	3615	T-1A	IL 171 1st Ave	Des Plaines River Rd	River Grove	CO	602
TS	3625	T-1A	IL 171 1st Ave	Fullerton Ave	River Grove	CO	603
TS	3660	T-1A	IL 171 1st Ave	Thatcher Rd Cut Off	River Grove	CO	604
TS	3675	T-1A	IL 171 1st Ave	G St Loyola Hospital	Broadview	CO	605
TS	3680	T-1A	5th Ave	DesPlaines River Rd	River Grove	CO	606
TS	3685	T-1A	5th Ave	Triton College North Entrance	River Grove	CO	607
TS	3690	T-1A	5th Ave	Triton College South Entrance	River Grove	CO	608
TS	3691	T-1A	31st St	Prairie Ave	LaGrange	CO	609
TS	3693	T-1A	30th St	Maple Ave	LaGrange Park	CO	610
TS	3695	T-1A	17th Ave Maple Ave	31st St Logan Blvd	LaGrange Park	CO	611
TS	3700	T-1A	22nd St Cermak Rd	17th Ave	Broadview	CO	612
TS	3701	T-1A	22nd St Cermak Rd	12th Ave	North Riverside	CO	613
TS	3715	T-1A	25th St	Lake St	Melrose Park	CO	614

TS	3720	T-1A	25th Ave	Lexington Dr	Broadview	CO	615
TS	3735	T-1A	26th St	Des Plaines Ave	North Riverside	CO	616
TS	3740	T-1A	26th St	East End Ave	Chicago Heights	CO	617
TS	3745	T-1A	26th St	Highland Blvd	Berwyn	CO	618
TS	3755	T-1A	26th St	Ridgeland Ave	Berwyn	CO	619
TS	3760	T-1A	31st St	Des Plaines Ave	North Riverside	CO	620
TS	3765	T-1A	31st St	Golfview Ln Cutoff to 1st Ave	Brookfield	CO	621
TS	3770	T-1A	31st St	Kemman Ave Grand Ave	LaGrange Park	CO	622
TS	3775	T-1A	31st St	Wolf Rd	Westchester	CO	623
TS	3805	T-1A	Central Ave	47th St	Forest View	CO	624
TS	3810	T-1A	47th St	Joliet Rd	Lyons	CO	625
TS	3815	T-1A	47th St	Lawndale Ave	Lyons	CO	626
TS	3820	T-1A	47th St	Plainfield Rd	Brookfield	CO	627
TS	3825	T-1A	47th St	Wolf Rd	Western Springs	CO	628
TS	3830	T-1A	55th St	Brainard Ave	Countryside	CO	629
TS	3835	T-1A	IL 171 Archer Ave	Center Ave Lawndale Ave	Summit	CO	630
TS	3840	T-1A	55th St	County Line Rd	Hinsdale	CO	631
TS	3845	T-1A	55th St	East Ave	Countryside	CO	632
TS	3855	T-1A	55th St	Plainfield Rd	Countryside	CO	633
TS	3860	T-1A	55th St	Willow Springs Rd	Countryside	CO	634
TS	3865	T-1A	55th St	Wolf Rd	Western Springs	CO	635
TS	3870	T-1A	55th St	Laurel Ave	Lyons	CO	636
TS	3875	T-1A	79th St	Austin Blvd	Burbank	CO	637
TS	3880	T-1A	79th St	Central Ave	Burbank	CO	638
TS	3885	T-1A	79th St	Narragansett Ave	Burbank	CO	639
TS	3890	T-1A	79th St	Roberts Rd	Bridgeview	CO	640
TS	3893	T-1A	79th St	Willow Springs Rd	Willow Springs	CO	641
TS	3895	T-1A	79th St	Sayre Ave	Bedford Park	CO	642
TS	3900	T-1A	79th St	State Rd	Burbank	CO	643
TS	3910	T-1A	87th St	Kedzie Ave	Evergreen Park	CO	644
TS	3920	T-1A	Crawford Ave Pulaski Rd	Southwest Hwy Columbus Dr	Hometowne	CO	645
TS	3925	T-1A	103rd St	Crawford Ave Pulaski Rd	Oak Lawn	CO	646
TS	3930	T-1A	103rd St	Kedzie Ave	Evergreen Park	CO	647
TS	3935	T-1A	103rd St	Southwest Hwy	Worth	CO	648
TS	3940	T-1A	111th St	86th Ave	Palos Hills	CO	649
TS	3942	T-1A	111th St	Possum Dr College Pkwy	Palos Hills	CO	650
TS	3945	T-1A	111th St	Central Ave	Chicago Ridge	CO	651
TS	3950	T-1A	111th St	Ridgeland Ave	Chicago Ridge	CO	652
TS	3955	T-1A	111th St	Roberts Rd	Palos Heights	CO	653

TS	3965	T-1A	115th St	Kedzie Ave	Merrionette Park	CO	654
TS	3970	T-1A	119th St	Vincennes Ave	Blue Island	CO	655
TS	3975	T-1A	127th St	76th Ave	Palos Park	CO	656
TS	3995	T-1A	127th St	Kedzie Ave	Blue Island	CO	657
TS	4000	T-1A	127th St	Ridgeland Ave	Palos Heights	CO	658
TS	4005	T-1A	127th St	Throop St	Calumet Park	CO	659
TS	4010	T-1A	127th St	Wood St	Calumet Park	CO	660
TS	4035	T-1A	135th St	Ridgeland Ave	Palos Heights	CO	661
TS	4045	T-1A	138th St	Ashland Ave Wood St	Riverdale	CO	662
TS	4050	T-1A	142nd St Main St	Chicago Ave	Dolton	CO	663
TS	4055	T-1A	142nd St Main St	Indiana Ave	Riverdale	CO	664
TS	4060	T-1A	142nd St Main St	Lincoln Ave	Dolton	CO	665
TS	4075	T-1A	147th St	Central Ave	Oak Forest	CO	666
TS	4076	T-1A	147th St	Ridgeland Ave	Oak Forest	CO	667
TS	4080	T-1A	154th St	Chicago Ave South Park Ave	South Holland	CO	668
TS	4085	T-1A	167th St	Wood St	Hazel Crest	CO	669
TS	4108	T-1A	183rd St	Ridgeland Ave	Tinley Park	CO	670
TS	4115	T-1A	IL 171 Cumberland Ave	Addison Ave	Chicago	CO	671
TS	4120	T-1A	IL 68 Algonquin Rd	Mt Prospect Rd	Des Plaines	CO	672
TS	4125	T-1A	IL 68 Algonquin Rd	Oakton St	Park Ridge	CO	673
TS	4130	T-1A	IL 68 Algonquin Rd	Wolf Rd	Des Plaines	CO	674
TS	4135	T-1A	Ashland Ave	Broadway and North Water St	Blue Island	CO	675
TS	4140	T-1A	Ashland Ave	Vermont St	Calumet Park	CO	676
TS	4145	T-1A	Ballard Rd	Dee Rd	Park Ridge	CO	677
TS	4146	T-1A	Ballard Rd	Nesset Dr	Park Ridge	CO	678
TS	4150	T-1A	Ballard Rd	Greenwood Ave	Niles	CO	679
TS	4155	T-1A	Ballard Rd	Potter Rd	Niles	CO	680
TS	4160	T-1A	Ballard Rd	Rand Rd	Des Plaines	CO	681
TS	4165	T-1A	Barrington Rd	Bourbon Parkway	Schaumburg	CO	682
TS	4180	T-1A	Barrington Rd	Schaumburg Rd	Schaumburg	CO	683
TS	4182	T-1A	Barrington Rd	Holmes Way	Schaumburg	CO	684
TS	4185	T-1A	Barrington Rd	Mundhank Rd	South Barrington	CO	685
TS	4188	T-1A	Barrington Rd	Locust Dr Lakewood Blvd	Hoffman Estates	CO	686
TS	4190	T-1A	Belmont Ave	80th Ave Pacific Ave	Elmwood Park	CO	687
TS	4200	T-1A	IL 171 Cumberland Ave	Belmont Ave	River Grove	CO	688
TS	4203	T-1A	IL 171 Cumberland Ave	Thatcher Woods Shopping Cntr	River Grove	CO	689
TS	4204	T-1A	Belmont Ave	Plainfield Rd	River Grove	CO	690
TS	4205	T-1A	Belmont Ave	Des Plaines River Rd	Franklin Park	CO	691
TS	4210	T-1A	Belmont Ave	Forest Preserve Dr	River Grove	CO	692
TS	4215	T-1A	Belmont Ave	77th Ave Overhill Ave	Elmwood Park	CO	693

TS	4220	T-1A	Brainard Ave	Burnham Ave	Burnham	CO	694
TS	4225	T-1A	Broadway	Joe Orr Rd and Riegel Rd	Chicago Heights	CO	695
TS	4240	T-1A	Burnham Ave	River Oaks Dr	Calumet City	CO	696
TS	4245	T-1A	Busse Rd	Potter Rd	Park Ridge	CO	697
TS	4250	T-1A	Busse Rd	Dempster St	Mt Prospect	CO	698
TS	4255	T-1A	Canfield	Devon Ave	Park Ridge	CO	699
TS	4260	T-1A	Canfield	Talcott Ave	Park Ridge	CO	700
TS	4270	T-1A	111th St	Crawford Ave Pulaski Rd	Alsip	CO	701
TS	4280	T-1A	IL 43 Harlem Ave	143rd St	Orland Park	CO	702
TS	4285	T-1A	IL 43 Harlem Ave	Foster Shopping Center	Harwood Heights	CO	703
TS	4660	T-1A	IL 59	West Bartlett Rd	Bartlett	CO	704
TS	4715	T-1A	IL 43 Harlem Ave	48th St Amoco Oil	Forest View	CO	705
TS	4725	T-1A	IL 50 Cicero Ave	37th St Citco Oil	Stickney	CO	706
TS	4735	T-1A	Central Ave	51st St	Forest View	CO	707
TS	4740	T-1A	Central Rd	Dee Rd	Glenview	CO	708
TS	4742	T-1A	Central Rd	Dearlove Rd Glenview Rd	Glenview	CO	709
TS	4745	T-1A	Central Rd	Greenwood Ave	Glenview	CO	710
TS	4755	T-1A	Central Rd Carpenter	Pratt Ave	Skokie	CO	711
TS	4765	T-1A	Central Rd	Wolf Rd	Des Plaines	CO	712
TS	4775	T-1A	22nd St Cermak Rd	57th Ave	Cicero	CO	713
TS	4780	T-1A	22nd St Cermak Rd	58th Ave	Cicero	CO	714
TS	4785	T-1A	22nd St Cermak Rd	Austin Blvd	Cicero	CO	715
TS	4790	T-1A	22nd St Cermak Rd	Central Ave	Cicero	CO	716
TS	4795	T-1A	22nd St Cermak Rd	Cermak Plaza North Entrance	Berwyn	CO	717
TS	4800	T-1A	22nd St Cermak Rd	Des Plaines River Rd	North Riverside	CO	718
TS	4805	T-1A	22nd St Cermak Rd	East Rd	Berwyn	CO	719
TS	4810	T-1A	22nd St Cermak Rd	Home Ave	Berwyn	CO	720
TS	4815	T-1A	22nd St Cermak Rd	Lombard Ave	Berwyn	CO	721
TS	4820	T-1A	22nd St Cermak Rd	North Riverside Plaza West	North Riverside	CO	722
TS	4825	T-1A	22nd St Cermak Rd	North Riverside Plaza East	North Riverside	CO	723
TS	4830	T-1A	22nd St Cermak Rd	Oak Park Ave	Berwyn	CO	724
TS	4835	T-1A	22nd St Cermak Rd	Ridgeland Ave	Berwyn	CO	725
TS	4840	T-1A	22nd St Cermak Rd	Riverside Dr Wesley St	Berwyn	CO	726
TS	4845	T-1A	22nd St Cermak Rd	Wolf Rd	Westchester	CO	727
TS	4850	T-1A	22nd St Cermak Rd	Westbrook Dr	Westchester	CO	728
TS	4851	T-1A	22nd St Cermak Rd	Enterprise Drive	Westchester	CO	729
TS	4855	T-1A	Chicago Rd	Indianwood Dr	Thornton	CO	730
TS	4861	T-1A	Chicago Heights Glenwood Rd	Holbrook Rd	Glenwood	CO	731

TS	4870	T-1A	Church St	Niles Center Rd	Skokie	CO	732
TS	4875	T-1A	Church St	McCormick Blvd	Skokie	CO	733
TS	4885	T-1A	Crawford Ave Pulaski Rd	99th St	Oak Lawn	CO	734
TS	4892	T-1A	Crawford Ave Pulaski Rd	Jewel Aldi 120th St	Alsip	CO	735
TS	4900	T-1A	Crawford Ave	167th St	Markham	CO	736
TS	4905	T-1A	Crawford Ave	175th St	Country Club Hills	CO	737
TS	4907	T-1A	Crawford Ave Pulaski Rd	178th St Cambridge Cir	Country Club Hills	CO	738
TS	4915	T-1A	Crawford Ave	Golf Rd	Skokie	CO	739
TS	4920	T-1A	Crawford Ave	Harrison St Old Orchard Rd	Skokie	CO	740
TS	4935	T-1A	Crawford Ave	Flossmoor Rd	Flossmoor	CO	741
TS	4940	T-1A	87th St	California Ave	Evergreen	CO	742
TS	4945	T-1A	Crawford Ave Pulaski Rd	Governors Hwy	Matteson	CO	743
TS	4950	T-1A	Crawford Ave Pulaski Rd	Wilmette Ave	Wilmette	CO	744
TS	4955	T-1A	Cumberland Ave	Devon Ave	Park Ridge	CO	745
TS	4960	T-1A	IL 171 Cumberland Ave	Forest Preserve Dr	Norridge	CO	746
TS	4965	T-1A	IL 171 Cumberland Ave	Lawrence Ave	Norridge	CO	747
TS	4970	T-1A	IL 171 Cumberland Ave	Montrose Ave	Norridge	CO	748
TS	4985	T-1A	DesPlaines River Rd	Grand Ave	River Grove	CO	749
TS	4990	T-1A	DesPlaines River Rd	Lawrence Ave	Schiller Park	CO	750
TS	5000	T-1A	Roosevelt Rd	Des Plaines Ave	Forest Park	CO	751
TS	5005	T-1A	DesPlaines River Rd	Touhy Ave	Des Plaines	CO	752
TS	5010	T-1A	DesPlaines River Rd	Fullerton Ave	River Grove	CO	753
TS	5015	T-1A	Dempster St	Crawford Ave	Skokie	CO	754
TS	5017	T-1A	Dempster St	Hamlin Ave	Skokie	CO	755
TS	5020	T-1A	Dempster St	East Prairie Ave	Skokie	CO	756
TS	5025	T-1A	Dempster St	St Louis Ave Lincoln Ave	Skokie	CO	757
TS	5030	T-1A	Dempster St	Keeler Ave Brownstone Ave	Skokie	CO	758
TS	5035	T-1A	Dempster St	McCormick Blvd	Skokie	CO	759
TS	5040	T-1A	Devon Ave	Dee Rd	Park Ridge	CO	760
TS	5045	T-1A	Devon Ave	McCormick Blvd	Lincolnwood	CO	761
TS	5047	T-1A	US 41 Lincoln Ave	Fire Station	Lincolnwood	CO	762
TS	5050	T-1A	Dixie Hwy	167th St 170th St	Markham	CO	763
TS	5065	T-1A	Joliet Rd	East Ave	Hodgkins	CO	764
TS	5066	T-1A	Joliet Rd	Quarry Mall Entrance	Hodgkins	CO	765
TS	5075	T-1A	East End Ave	Sauk Trail	South Chicago Heights	CO	766
TS	5090	T-1A	Euclid Ave	Wolf Rd	Mt Prospect	CO	767
TS	5110	T-1A	Franklin Ave	Wolf Rd	Franklin Park	CO	768
TS	5115	T-1A	Fullerton Ave	Thatcher Ave	River Grove	CO	769
TS	5120	T-1A	Foundry Kensington	Wolf Rd	Mt Prospect	CO	770

TS	5130	T-1A	Glenwood Dyer Rd	Main St Glenwood Lansing Rd	Glenwood	CO	771
TS	5135	T-1A	Glenview Rd	Greenwood Ave	Glenview	CO	772
TS	5140	T-1A	Golf Rd	Central Park Ave	Skokie	CO	773
TS	5145	T-1A	Golf Rd	East Prairie Ave	Skokie	CO	774
TS	5150	T-1A	Golf Rd	Gross Point Rd	Skokie	CO	775
TS	5152	T-1A	Gross Point Rd	Kenton Ave	Skokie	CO	776
TS	5155	T-1A	Golf Rd	Harms Rd	Morton Grove	CO	777
TS	5157	T-1A	Golf Rd	Woods Dr	Skokie	CO	778
TS	5160	T-1A	Golf Rd	Lavergne Ave	Skokie	CO	779
TS	5165	T-1A	Golf Rd	Lawler Ave	Skokie	CO	780
TS	5170	T-1A	Golf Rd	McCormic Blvd	Skokie	CO	781
TS	5175	T-1A	Golf Rd	Glenview Country Club	Golf	CO	782
TS	5185	T-1A	Governors Hwy	Kedzie Ave	Flossmoor	CO	783
TS	5195	T-1A	Governors Hwy	Poplar Ave	Richton Park	CO	784
TS	5205	T-1A	Grand Ave	Oak St Struckman Ave	River Grove	CO	785
TS	5210	T-1A	Grand Ave	Mt Prospect Rd	Franklin Park	CO	786
TS	5211	T-1A	Grand Ave	Northwest Ave	Northlake	CO	787
TS	5215	T-1A	IL 171 1st Ave	Grand Ave	River Grove	CO	788
TS	5220	T-1A	Grand Ave	Wolf Rd	Northlake	CO	789
TS	5235	T-1A	Greenwood Ave	Lake Ave	Glenview	CO	790
TS	5240	T-1A	Gross Point Rd	Church St	Skokie	CO	791
TS	5245	T-1A	Gross Point Rd	Harrison St Old Orchard Rd	Skokie	CO	792
TS	5250	T-1A	Gross Point Rd	Laramie Ave Carol St	Skokie	CO	793
TS	5255	T-1A	Gross Point Rd	Oakton St Central Ave	Morton Grove	CO	794
TS	5270	T-1A	Gunnison St	Nagle Ave	Harwood Heights	CO	795
TS	5275	T-1A	Gunnison St	Oak Park Ave	Harwood Heights	CO	796
TS	5285	T-1A	Gross Point Rd	Milwaukee Ave	Niles	CO	797
TS	5295	T-1A	Hicks Rd	Cunningham Dr	Palatine	CO	798
TS	5300	T-1A	Hicks Rd	Euclid St	Rolling Meadows	CO	799
TS	5305	T-1A	Hicks Rd	Illinois St Industrial Dr	Palatine	CO	800
TS	5315	T-1A	Hicks Rd	Hicks Rd @ Carpenter	Palatine	CO	801
TS	5320	T-1A	Hibbard St	Lake Ave	Wilmette	CO	802
TS	5325	T-1A	Howard St	US 41 Lincoln Ave	Skokie	CO	803
TS	5335	T-1A	Howard St	Lehigh Ave	Niles	CO	804
TS	5345	T-1A	Indiana Ave	137th St	Riverdale	CO	805
TS	5350	T-1A	Indiana	Indiana @ 138th St	Riverdale	CO	806
TS	5365	T-1A	Joliet Rd	Willow Springs Rd	Countryside	CO	807
TS	5370	T-1A	Joliet Rd	Wolf Rd	Countryside	CO	808
TS	5380	T-1A	Kedzie Ave	119th St Oakhill Cemetery	Merrionette Park	CO	809
TS	5385	T-1A	Kedzie Ave	123rd St	Alsip	CO	810
TS	5390	T-1A	Kensington	Wheeling Rd	Mt Prospect	CO	811

TS	5395	T-1A	Kirchoff Rd	Wilke Rd	Rolling Meadows	CO	812
TS	5425	T-1A	Lake Cook Rd	Quentin Rd	Palatine	CO	813
TS	5430	T-1A	Lake Cook Rd	Sheridan Rd	Highland Park	CO	814
TS	5435	T-1A	Lawrence Ave	Dee Rd East River Rd	Norridge	CO	815
TS	5440	T-1A	Lawrence Ave	Foster Rd	Schiller Park	CO	816
TS	5445	T-1A	Lee St	Touhy Ave	Des Plaines	CO	817
TS	5448	T-1A	Oakton St	River Rd	Morton Grove	CO	818
TS	5450	T-1A	Lehigh Ave	Oakton St	Morton Grove	CO	819
TS	5455	T-1A	Lehigh Ave	Touhy Ave	Niles	CO	820
TS	5460	T-1A	Madison St	Jackson Blvd	Forest Park	CO	821
TS	5465	T-1A	McCormick Blvd	Main St	Skokie	CO	822
TS	5475	T-1A	McCormick Blvd	Pratt Ave	Lincolnwood	CO	823
TS	5477	T-1A	McCormick Blvd	Northeast Pkwy	Lincolnwood	CO	824
TS	5480	T-1A	McCormick Blvd	Touhy Ave	Skokie	CO	825
TS	5483	T-1A	Touhy Ave	Kedzie Ave	Skokie	CO	826
TS	5490	T-1A	Milwaukee Ave	Touhy Ave	Niles	CO	827
TS	5500	T-1A	Montrolse Ave	Narragansett Ave	Harwood Heights	CO	828
TS	5505	T-1A	Northwest Hwy	Oakton St	Park Ridge	CO	829
TS	5510	T-1A	Northwest Hwy	Potter Rd	Park Ridge	CO	830
TS	5515	T-1A	Oak Park Ave	31st St	Berwyn	CO	831
TS	5520	T-1A	US 34 Ogden Ave	Oak Park Ave	Berwyn	CO	832
TS	5525	T-1A	Roosevelt Rd	Oak Park Ave	Berwyn	CO	833
TS	5535	T-1A	Oakton St	Florence Dr	Park Ridge	CO	834
TS	5540	T-1A	Oakton St	Greenwood Ave	Park Ridge	CO	835
TS	5545	T-1A	Oakton St	Mt Prospect Rd	Des Plaines	CO	836
TS	5550	T-1A	Oakton St	Wolf Rd	Des Plaines	CO	837
TS	5555	T-1A	US 34 Ogden Ave	31st St	Cicero	CO	838
TS	5556	T-1A	US 34 Ogden Ave	25th Pl 26th St	Cicero	CO	839
TS	5557	T-1A	IL 50 Cicero Ave	Connector	Cicero	CO	840
TS	5558	T-1A	US 34 Ogden Ave	Connector	Cicero	CO	841
TS	5565	T-1A	US 34 Ogden Ave	Austin Blvd	Berwyn	CO	842
TS	5570	T-1A	US 34 Ogden Ave	Clarence Ave	Berwyn	CO	843
TS	5575	T-1A	US 34 Ogden Ave	Cliton Ave	Berwyn	CO	844
TS	5580	T-1A	US 34 Ogden Ave	East Ave	Berwyn	CO	845
TS	5590	T-1A	US 34 Ogden Ave	Home Ave	Berwyn	CO	846
TS	5595	T-1A	US 34 Ogden Ave	Ridgeland Ave 34th St	Berwyn	CO	847
TS	5600	T-1A	Old Plum Grove Rd	Meacham Rd	Rolling Meadows	CO	848
TS	5605	T-1A	Palatine Rd	Kennicott Dr	Arlington Heights	CO	849
TS	5610	T-1A	Palatine Rd	Quentin Rd	Palatine	CO	850
TS	5620	T-1A	Palatine Rd	Schoenbeck Rd	Arlington Heights	CO	851
TS	5625	T-1A	Palatine Rd	Wheeling Rd	Wheeling	CO	852
TS	5630	T-1A	Palatine Rd	Windsor Drive	Arlington Heights	CO	853

TS	5640	T-1A	Palatine Rd	Wolf Rd	Wheeling	CO	854
TS	5645	T-1A	Palatine Rd	Ela Rd	Barrington	CO	855
TS	5650	T-1A	171st St	Park Ave	Hazel Crest	CO	856
TS	5655	T-1A	Willow Rd	Pfingsten Rd	Glenview	CO	857
TS	5652	T-1A	Palatine Rd	Huntington Rd	Hoffman Estates	CO	858
TS	5670	T-1A	Colfax Ave	Quentin Rd	Palatine	CO	859
TS	5675	T-1A	Ridgeland Ave	96th St	Chicago Ridge	CO	860
TS	5680	T-1A	Ridgeland Ave	98th St	Chicago Ridge	CO	861
TS	5690	T-1A	Ridgeland Ave	Ridgeland Ave Commons Shopping	Chicago Ridge	CO	862
TS	5715	T-1A	IL 53 Rohlwing Rd	Devon Ave	Elk Grove	CO	863
TS	5720	T-1A	Roosevelt Rd	5th Ave	Maywood	CO	864
TS	5725	T-1A	Roosevelt Rd	9th Ave	Broadview	CO	865
TS	5735	T-1A	Roosevelt Rd	East Ave	Berwyn	CO	866
TS	5740	T-1A	Roosevelt Rd	Laramie Ave	Cicero	CO	867
TS	5750	T-1A	Roosevelt Rd	Ridgeland Ave	Berwyn	CO	868
TS	5770	T-1A	Shermer Rd	Willow Rd	Northbrook	CO	869
TS	5780	T-1A	State Rd	Central Ave 80th St	Burbank	CO	870
TS	5785	T-1A	State St	Illinois St	Lemont	CO	871
TS	5790	T-1A	State Rd	Steger Rd	Crete	CO	872
TS	5800	T-1A	St Charles Rd	Wolf Rd	Berkeley	CO	873
TS	5810	T-1A	Talcott Rd	Dee Rd	Park Ridge	CO	874
TS	5815	T-1A	Talcott Rd	Touhy Ave	Park Ridge	CO	875
TS	5830	T-1A	Touhy Ave	Dee Rd	Park Ridge	CO	876
TS	5835	T-1A	Touhy Ave	Kostner Ave	Lincolnwood	CO	877
TS	5840	T-1A	Touhy Ave	Mobile Ave	Niles	CO	878
TS	5841	T-1A	Touhy Ave	Meade Ave	Niles	CO	879
TS	5843	T-1A	Touhy Ave	Melvina Ave	Niles	CO	880
TS	5845	T-1A	Touhy Ave	Riverside Ave	Niles	CO	881
TS	5850	T-1A	Washington Blvd Randolph St	Lathrop Ave	Oak Park	CO	882
TS	5855	T-1A	91st St	Western Ave	Evergreen Park	CO	883
TS	5860	T-1A	Western Ave	98th St	Evergreen Park	CO	884
TS	5865	T-1A	Western Ave	99th St	Evergreen Park	CO	885
TS	5875	T-1A	123rd St	Western Ave	Blue Island	CO	886
TS	5880	T-1A	139th St	Western Ave	Dixmoor	CO	887
TS	5885	T-1A	Western Ave	Monee Rd	Park Forest	CO	888
TS	5890	T-1A	Western Ave	Steger Rd	Park Forest	CO	889
TS	5915	T-1A	Willow Rd	Greenwood Ave	Northbrook	CO	890
TS	5920	T-1A	Willow Rd	Landwehr Rd	Glenview	CO	891
TS	5925	T-1A	Willow Rd	Sanders Rd	Glenview	CO	892
TS	5927	T-1A	Willow Rd	Culligan Accenture Pkwy	Glenview	CO	893
TS	5930	T-1A	Willow Rd	Old Willow Rd	Northfield	CO	894

TS	5931	T-1A	Willow Rd	Ravina Way	Glenview	CO	895
TS	5932	T-1A	Willow Rd	Patriot Blvd	Glenview	CO	896
TS	5935	T-1A	Willow Springs Rd	Plainfield Rd	Countryside	CO	897
TS	5940	T-1A	Wireton Rd	Francisco Ave	Blue Island	CO	898
TS	5944	T-1A	Wolf Rd	Edward Rd	Prospect Heights	CO	899
TS	5945	T-1A	Wolf Rd	Camp McDonald Rd	Mt Prospect	CO	900
TS	5950	T-1A	Wolf Rd	Willow Rd Old Willow Rd	Prospect Heights	CO	901
TS	5955	T-1A	Wolf Rd	Howard St	Des Plaines	CO	902
TS	6077	T-1A	US 20 Lake St	North Ave East Bartlett Rd	Bartlett	CO	903
TS	6612	T-1A	US 45 Mannheim	IL 83 E Ramps B&D	Palos Township	CO	904
TS	6613	T-1A	US 45 Mannheim	IL 83 W Ramps A&C	Des Plaines	CO	905
TS	7185	T-1A	Lake Cook Rd	Hart Rd	Barrington	CO	906
TS	7635	T-1A	IL 19 Irving Park Rd	Rodenburg Rd	Schaumburg	CO	907
TS	7637	T-1A	IL 19 Irving Park Rd	Wright Blvd	Schaumburg	CO	908
TS	7645	T-1A	IL 43 Harlem Ave	Grand Ave Fullerton Ave	Elmwood Park	CO	909
TS	7655	T-1A	IL 62 Algonquin Rd	Lexington Dr	Hoffman Estates	CO	910
TS	7860	T-1A	Barrington Rd	Tower Dr	Hanover Park	CO	911
TS	7885	T-1A	IL 62 Algonquin Rd	Quentin Rd	Schaumburg	CO	912
TS	7947	T-1A	IL 43 Harlem Ave	34th St Windsor Dr	Riverside	CO	913
TS	7950	T-1A	IL 43 Harlem Ave	32nd St	Berwyn	CO	914
TS	8780	T-1A	IL 58 Golf Rd	Woodfield Mall Center Entrance	Schaumburg	CO	915
TS	8785	T-1A	IL 58 Golf Rd	Woodfield Mall W Ent	Schaumburg	CO	916
TS	8790	T-1A	IL 58 Golf Rd	Woodfield Mall E Ent Hyatt Ent	Schaumburg	CO	917
TS	8800	T-1A	IL 64 North Ave	Winston Plaza Entrance	Melrose Park	CO	918
TS	8905	T-1A	IL 58 Golf Rd	Lamon Ave	Skokie	CO	919
TS	8910	T-1A	IL 43 Harlem Ave	167th St	Tinley Park	CO	920
TS	8920	T-1A	IL 43 Harlem Ave	171st ST	Tinley Park	CO	921
TS	8935	T-1A	IL 43 Harlem Ave	163rd St Brementowne Dr	Tinley Park	CO	922
TS	8940	T-1A	IL 19 Irving Park Rd	Park Blvd	Streamwood	CO	923
TS	9185	T-1A	Cumberland Ave	Talcott Ave	Park Ridge	CO	924
TS	9190	T-1A	IL 171 Cumberland Ave	Touhy Ave	Park Ridge	CO	925
TS	9205	T-1A	Greenwood Ave	Talcott Ave	Park Ridge	CO	926
TS	9215	T-1A	US 14 Northwest Hwy	Meacham Ave	Park Ridge	CO	927
TS	9220	T-1A	US 14 Northwest Hwy	Washington St	Park Ridge	CO	928
TS	9222	T-1A	Touhy Ave	Summit Ave	Park Ridge	CO	929
TS	9240	T-1A	Busse Hwy	Meacham AveTouhy Ave Park Ridge Blvd	Park Ridge	CO	930
TS	9245	T-1A	Courtland St	Devon Ave	Park Ridge	CO	931
TS	9247	T-1A	US 14 Northwest Hwy	Summit Ave	Park Ridge	CO	932

TS	9250	T-1A	US 14 Northwest Hwy	Prospect Ave Park Ridge Blvd	Park Ridge	CO	933
TS	9255	T-1A	Touhy Ave	Washington St	Park Ridge	CO	934
TS	9335	T-1A	Crawford Ave	107th St	Oak Lawn	CO	935
TS	9360	T-1A	22nd St Cermak Rd	Mid City Bank N Riverside	North Riverside	CO	936
TS	9625	T-1A	IL 83 Elmhurst Rd	Lonnquist Blvd	Mt Prospect	CO	937
TS	9630	T-1A	US 14 Northwest Hwy	IL 83 Elmhurst Rd	Mt Prospect	CO	938
TS	9640	T-1A	US 14 Northwest Hwy	Emerson St	Mt Prospect	CO	939
TS	9653	T-1A	Busse Rd	Central Rd	Mt Prospect	CO	940
TS	9654	T-1A	Central Rd	3 Com Ent	Mt Prospect	CO	941
TS	9660	T-1A	IL 83 Elmhurst Rd	Central Rd	Mt Prospect	CO	942
TS	9665	T-1A	IL 83 Elmhurst Rd	Council Trail	Mt Prospect	CO	943
TS	9670	T-1A	IL 83 Elmhurst Rd	Lincoln St	Mt Prospect	CO	944
TS	9690	T-1A	US 14 Northwest Hwy	Central Rd	Mt Prospect	CO	945
TS	9726	T-1A	147th St	Oak Park Ave Justamere Rd	Oak Forest	CO	946
TS	9727	T-1A	143rd St	Justamere Rd	Midlothian	CO	947
TS	9950	T-1A	US 6 159th St	Oak Forest Hospital	Oak Forest	CO	948
TS	10125	T-1A	IL 43 Harlem Ave	Harlem Irving Plaza	Chicago/Norridge	CO	949
TS	10597	T-1A	IL 43 Waukegan Rd	Golf Gate Shopping Access	Glenview	CO	950
TS	10635	T-1A	US 6 159th St	Central Park Ave	Markham	CO	951
TS	10640	T-1A	US 6 159th St	Richmond Ave	Markham	CO	952
TS	10880	T-1A	IL 43 Waukegan Rd	Dewes St	Glenview	CO	953
TS	10900	T-1A	IL 43 Waukegan Rd	Carillon Square	Glenview	CO	954
TS	10905	T-1A	IL 43 Waukegan Rd	Glenview Rd	Glenview	CO	955
TS	10915	T-1A	IL 64 North Ave	Jewel Foods Plant Entrance	Melrose Park	CO	956
TS	10920	T-1A	IL 43 Waukegan Rd	Grove St	Glenview	CO	957
TS	10970	T-1A	US 12 45 Mannheim Rd	Belmont Ave	Franklin Park	CO	958
TS	11015	T-1A	US 12 45 Mannheim Rd	Grand Ave	Franklin Park	CO	959
TS	11030	T-1A	US 12 45 Mannheim Rd	Seymour Ave	Franklin Park	CO	960
TS	11035	T-1A	US 12 45 Mannheim Rd	Waveland Ave	Franklin Park	CO	961
TS	11040	T-1A	DesPlaines River Rd	King Ave	Franklin Park	CO	962
TS	11080	T-1A	55th St	Electro Motive Dr	McCook	CO	963
TS	11130	T-1A	IL 59	Shoe Factory Rd	Hoffman Estates	CO	964
TS	11133	T-1A	IL 72 Higgins Rd	Shoe Factory Rd	Hoffman Estates	CO	965
TS	11161	T-1A	Touhy Ave	Northpoint Plaza Circuit City	Niles	CO	966
TS	11170	T-1A	IL 58 Golf Rd	Michael Manor	Niles	CO	967
TS	11185	T-1A	Devon Ave	Kenton Ave Lemont Rd	Chicago/Lincolnwood	CO	968
TS	11190	T-1A	US 30 Lincoln Hwy	Matteson Shopping Center	Matteson	CO	969
TS	11210	T-1A	IL 58 Golf Rd	Milwaukee Plaza Toys R US Ent	Niles	CO	970

TS	11245	T-1A	US 12 45 Lee St	US 12 45 Mannheim Rd	Des Plaines	CO	971
TS	11250	T-1A	Touhy Ave	Central Ave	Niles	CO	972
TS	11270	T-1A	US 20 Lake St	Bartlett Rd	Bartlett	CO	973
TS	11280	T-1A	IL 59 Hough Rd	Main St Lake Cook Rd	Barrington	CO	974
TS	11282	T-1A	Lake Cook Rd	Applebee's Ent	Barrington	CO	975
TS	11285	T-1A	Barrington Rd	Palatine Rd	Barrington	CO	976
TS	11290	T-1A	US 12 Rand Rd	IL 53 W Ramp	Arlington Heights	CO	977
TS	11295	T-1A	US 12 Rand Rd	IL 53 E Ramp	Arlington Heights	CO	978
TS	11303	T-1A	West Lake Ave	Greenwood Rd	Glenview	CO	979
TS	11305	T-1A	Pfingsten Rd	West Lake Ave	Glenview	CO	980
TS	11310	T-1A	IL 72 Higgins Rd	IL 83 Busse Rd	Elk Grove	CO	981
TS	11320	T-1A	Arlington Heights Rd	Northwest Point South Dr	Elk Grove	CO	982
TS	11325	T-1A	IL 43 Harlem Ave	161st St	Tinley Park	CO	983
TS	11330	T-1A	US 6 159th St	Park Center Dr	Tinley Park	CO	984
TS	11345	T-1A	US 30 Lincoln Hwy	Mid Continent Drive	Matteson	CO	985
TS	11460	T-1A	IL 83 Sibley Blvd 147th St	Woodlawn Ave	Dolton	CO	986
TS	11465	T-1A	IL 83 Sibley Blvd 147th St	Greenwood Rd	Dolton	CO	987
TS	11470	T-1A	IL 83 Sibley Blvd 147th St	Engle Ct	Dolton	CO	988
TS	11475	T-1A	IL 83 Sibley Blvd 147th St	Cottage Grove Ave Dolton Ave	Dolton	CO	989
TS	11635	T-1A	IL 171 Archer Ave	65th St	Bedford Park	CO	990
TS	11640	T-1A	US 12 20 95th St	Kean Ave	Hickory Hills	CO	991
TS	11645	T-1A	IL 50 Cicero Ave	23rd St	Cicero	CO	992
TS	11690	T-1A	IL 68 Dundee Rd	Northgate Pkwy	Wheeling	CO	993
TS	11695	T-1A	US 14 Northwest Hwy	Elm St	Park Ridge	CO	994
TS	11710	T-1A	US 6 159th St	Arroyo Dr	Oak Forest	CO	995
TS	11720	T-1A	IL 50 Cicero Ave	175th St	Country Club Hills	CO	996
TS	11730	T-1A	Hicks Rd	Northrup Rd	Rolling Meadows	CO	997
TS	11735	T-1A	Hicks Rd	Hellen Rd	Palatine	CO	998
TS	11750	T-1A	US 6 159th St	Park Ave	Harvey	CO	999
TS	11755	T-1A	Ashland Ave Wood St	Thornton Blue Island Rd	Dixmoor	CO	1000
TS	11760	T-1A	US 12 20 95th St	76th Ave	Hickory Hills	CO	1001
TS	11765	T-1A	US 12 20 95th St	88th Ave	Hickory Hills	CO	1002
TS	11770	T-1A	Ridgeland Ave	IL 7 Southwest Hwy	Chicago Ridge	CO	1003
TS	11785	T-1A	US 12 20 95th St	California Ave	Evergreen Park	CO	1004
TS	11790	T-1A	US 12 20 95th St	Utica Ave	Evergreen Park	CO	1005
TS	11795	T-1A	US 12 20 95th St	Mariano Ent	Evergreen Park	CO	1006
TS	11800	T-1A	22nd St Cermak Rd	1st Ave Cut off	North Riverside	CO	1007
TS	11815	T-1A	IL 171 Archer Ave	123td St McCarthy Rd	Lemont	CO	1008
TS	11853	T-1A	Kedzie Ave	94th Ave	Evergreen Park	CO	1009
TS	11860	T-1A	IL 68 Dundee Rd	Ela Rd	Barrington	CO	1010

TS	11861	T-1A	US 14 Northwest Hwy	IL 68 Dundee Rd East Ramp	Palatine	CO	1011
TS	11862	T-1A	US 14 Northwest Hwy	IL 68 Dundee Rd West Ramp	Palatine	CO	1012
TS	12005	T-1A	Hicks Rd	Old Hicks Rd	Palatine	CO	1013
TS	12010	T-1A	IL 58 Dempster St	Gross Point Rd	Skokie	CO	1014
TS	12015	T-1A	IL 56 Butterfield Rd	Taft Ave	Hillside	CO	1015
TS	12025	T-1A	Lawrence Ave	25th Ave Ruby St	Schiller Park	CO	1016
TS	12035	T-1A	Crawford Ave Pulaski Rd	93rd St	Oak Lawn /Evergreen	CO	1017
TS	12075	T-1A	IL 72 Higgins Rd	Huntington Blvd	Hoffman Estates	CO	1018
TS	12090	T-1A	Touhy Ave	Barclay Pl Hyatt Dr	Lincolnwood	CO	1019
TS	12100	T-1A	State St	Taft Ave	South Holland	CO	1020
TS	12101	T-1A	State St	168th St	South Holland	CO	1021
TS	12102	T-1A	State St	Armory Dr	South Holland	CO	1022
TS	12105	T-1A	142nd St	Cottage Grove Ave	Dolton	CO	1023
TS	12125	T-1A	IL 83 Busse Rd	Howard St	Elk Grove	CO	1024
TS	12135	T-1A	111th St	Kostner Ave	Oak Lawn	CO	1025
TS	12155	T-1A	IL 53 IL 68 Dundee Rd	IL 53 West Ramp	Arlington Heights	CO	1026
TS	12160	T-1A	IL 53 IL 68 Dundee Rd	IL 53 East Ramp	Arlington Heights	CO	1027
TS	12165	T-1A	27th St	Lake St	Melrose Park	CO	1028
TS	12175	T-1A	US 12 Rand Rd	Winslowe Dr Park Pl	Palatine	CO	1029
TS	12220	T-1A	IL 171 Archer Ave	66th Pl	Bedford Park	CO	1030
TS	12400	T-1A	IL 50 Cicero Ave	Southwick Dr	Matteson	CO	1031
TS	12403	T-1A	IL 50 Cicero Ave	Wal Mart Ent	Matteson	CO	1032
TS	12404	T-1A	IL 50 Cicero Ave	North Gateway Dr	Matteson	CO	1033
TS	12530	T-1A	IL 43 Harlem Ave	100th Pl	Bridgeview	CO	1034
TS	12535	T-1A	Arlington Heights Rd	White Oak St	Arlington Heights	CO	1035
TS	12540	T-1A	Arlington Heights Rd	Central Rd	Arlington Heights	CO	1036
TS	12550	T-1A	Arlington Heights Rd	Sigwalt St	Arlington Heights	CO	1037
TS	12555	T-1A	US 14 Northwest Hwy	Arlington Heights Rd	Arlington Heights	CO	1038
TS	12560	T-1A	Arlington Heights Rd	Miner Rd	Arlington Heights	CO	1039
TS	12565	T-1A	Arlington Heights Rd	Euclid Ave	Arlington Heights	CO	1040
TS	12585	T-1A	Arlington Heights Rd	Lillian Ave	Arlington Heights	CO	1041
TS	12590	T-1A	Arlington Heights Rd	Palatine Rd	Arlington Heights	CO	1042
TS	12595	T-1A	Arlington Heights Rd	US 12 Rand Rd	Arlington Heights	CO	1043
TS	12600	T-1A	Arlington Heights Rd	North Point SC	Arlington Heights	CO	1044
TS	12615	T-1A	Central Rd	Kirchoff Rd	Arlington Heights	CO	1045
TS	12620	T-1A	Central Rd	Arthur St	Arlington Heights	CO	1046
TS	12625	T-1A	US 12 Rand Rd	Cub Foods Ent	Arlington Heights	CO	1047
TS	12630	T-1A	US 12 Rand Rd	Palatine Rd	Arlington Heights	CO	1048
TS	12635	T-1A	US 12 Rand Rd	Northpoint Center	Arlington Heights	CO	1049
TS	12640	T-1A	US 12 Rand Rd	Arlington Plaza	Arlington Heights	CO	1050
TS	12660	T-1A	US 14 Northwest Hwy	Euclid Ave	Arlington Heights	CO	1051

TS	12665	T-1A	US 14 Northwest Hwy	McKinley Ave Arthur Ave	Arlington Heights	CO	1052
TS	12675	T-1A	US 14 Northwest Hwy	Evergreen Ave	Arlington Heights	CO	1053
TS	12680	T-1A	US 14 Northwest Hwy	Dunton Ave	Arlington Heights	CO	1054
TS	12685	T-1A	US 14 Northwest Hwy	Vail Ave	Arlington Heights	CO	1055
TS	12690	T-1A	US 14 Northwest Hwy	Walnut Ave Ridge Ave	Arlington Heights	CO	1056
TS	12700	T-1A	US 12 Rand Rd	Annex SC	Arlington Heights	CO	1057
TS	12770	T-1A	IL 50 Cicero Ave	22nd St Cermak Rd	Cicero	CO	1058
TS	12775	T-1A	22nd St Cermak Rd	49th Ave	Cicero	CO	1059
TS	12780	T-1A	22nd St Cermak Rd	50th Ave	Cicero	CO	1060
TS	12785	T-1A	22nd St Cermak Rd	Laramie Ave	Cicero	CO	1061
TS	12790	T-1A	22nd St Cermak Rd	54th Ave	Cicero	CO	1062
TS	12795	T-1A	IL 50 Cicero Ave	16th St	Cicero	CO	1063
TS	12825	T-1A	IL 50 Cicero Ave	19th St	Cicero	CO	1064
TS	12830	T-1A	IL 50 Cicero Ave	29th St	Cicero	CO	1065
TS	12966	T-1A	IL 43 Waukegan Rd	Chestnut St By Deerbrook Mall	Deerfield	CO	1066
TS	12985	T-1A	Touhy Ave	Maple Ave	Des Plaines	CO	1067
TS	12995	T-1A	Oakton St	Webster Ln	Des Plaines	CO	1068
TS	13000	T-1A	US 12 45 Lee St	Algonquin Rd	Des Plaines	CO	1069
TS	13005	T-1A	Algonquin Rd	Seymour Ave	Des Plaines	CO	1070
TS	13020	T-1A	IL 58 Golf Rd	Mt Prospect Rd	Des Plaines	CO	1071
TS	13025	T-1A	US 12 45 Lee St Mannheim Rd	Prairie Ave	Des Plaines	CO	1072
TS	13026	T-1A	US 12 45 Lee St Mannheim Rd	Thacker St	Des Plaines	CO	1073
TS	13027	T-1A	US 12 45 Graceland Ave	Thacker St	Des Plaines	CO	1074
TS	13040	T-1A	US 14 Miner St	Pearson St	Des Plaines	CO	1075
TS	13050	T-1A	US 12 45 Graceland Ave	Prairie Ave	Des Plaines	CO	1076
TS	13055	T-1A	US 12 45 Graceland Ave	US 14 Miner St	Des Plaines	CO	1077
TS	13065	T-1A	US 12 45 Mannheim Rd	Prospect Ave	Des Plaines	CO	1078
TS	13070	T-1A	DesPlaines River Rd	Perry St	Des Plaines	CO	1079
TS	13071	T-1A	US 12 45 Lee St	Perry St	Des Plaines	CO	1080
TS	13072	T-1A	DesPlaines River Rd	Pearson St	Des Plaines	CO	1081
TS	13075	T-1A	US 14 Miner St	Des Plaines River Rd	Des Plaines	CO	1082
TS	13080	T-1A	US 14 Northwest Hwy	State St	Des Plaines	CO	1083
TS	13085	T-1A	US 12 Rand Rd	3rd Ave	Des Plaines	CO	1084
TS	13140	T-1A	IL 72 Higgins Rd	Lively Blvd	Elk Grove	CO	1085
TS	13145	T-1A	IL 53 Rohlwing Rd	Nerge Rd	Elk Grove	CO	1086
TS	13150	T-1A	IL 53 Rohlwing Rd	Biesterfield Rd	Elk Grove	CO	1087
TS	13285	T-1A	IL 58 Summit St	Hiawatha Dr	Elgin	CO	1088
TS	13286	T-1A	IL 58 Summit St	Waverly Dr	Elgin	CO	1089
TS	13440	T-1A	IL 19 Irving Park Rd	Chicago St and Willard Ave	Elgin	CO	1090

TS	13470	T-1A	Wolf Rd	Dempster St Thacker Ave	Des Plaines	CO	1091
TS	13650	T-1A	US 34 Ogden Ave	Waiola Ave	LaGrange	CO	1092
TS	13685	T-1A	DesPlaines Ave	Jackson St	Forest Park	CO	1093
TS	13687	T-1A	DesPlaines Ave	CTA Station	Forest Park	CO	1094
TS	13700	T-1A	Roosevelt Rd	Circle Ave	Forest Park	CO	1095
TS	13745	T-1A	IL 19 Irving Park Rd	Barrington Rd	Hanover Park	CO	1096
TS	13750	T-1A	IL 19 Irving Park Rd	Menards Ent Tradewinds Ent	Hanover Park	CO	1097
TS	13755	T-1A	IL 19 Irving Park Rd	Kingsbury Dr	Hanover Park	CO	1098
TS	13756	T-1A	IL 19 Irving Park Rd	Westview Center	Hanover Park	CO	1099
TS	13760	T-1A	US 20 Lake St	Metra Commuter Lot Church St	Hanover Park	CO	1100
TS	13762	T-1A	US 20 Lake St	Center Ave	Hanover Park	CO	1101
TS	13765	T-1A	US 20 Lake St	Barrington Rd	Hanover Park	CO	1102
TS	13785	T-1A	150th St	Dixie Hwy	Harvey	CO	1103
TS	13790	T-1A	154th St	Dixie Hwy	Harvey	CO	1104
TS	13795	T-1A	150th St	Wood St	Harvey	CO	1105
TS	13800	T-1A	154th St	Wood St	Harvey	CO	1106
TS	13805	T-1A	155th St	Wood St	Harvey	CO	1107
TS	13810	T-1A	156th St	Wood St	Harvey	CO	1108
TS	13815	T-1A	158th St	Wood St	Harvey	CO	1109
TS	13820	T-1A	154th St	Park Ave	Harvey	CO	1110
TS	13825	T-1A	155th St	Park Ave	Harvey	CO	1111
TS	13830	T-1A	157th St	Park Ave	Harvey	CO	1112
TS	13835	T-1A	150th St	Morgan St	Harvey	CO	1113
TS	13855	T-1A	US 34 Ogden Ave	Brainard Ave	LaGrange	CO	1114
TS	13865	T-1A	US 34 Ogden Ave	Kensington Ave	LaGrange	CO	1115
TS	13870	T-1A	US 34 Ogden Ave	Eberle Ave East Ave	Brookfield	CO	1116
TS	13871	T-1A	US 34 Ogden Ave	DuBois Blvd	Brookfield	CO	1117
TS	13872	T-1A	US 34 Ogden Ave	US 34 Ogden Ave @ Maple Ave	Brookfield	CO	1118
TS	13873	T-1A	US 34 Ogden Ave	Prairie Ave	Brookfield	CO	1119
TS	13880	T-1A	US 12 20 45 LaGrange Rd	Harris Ave	LaGrange	CO	1120
TS	13885	T-1A	US 12 20 45 LaGrange Rd	Cossit Ave	LaGrange	CO	1121
TS	13895	T-1A	47th St	Edgewood Ave	LaGrange	CO	1122
TS	13900	T-1A	47th St	Brainard Ave	LaGrange	CO	1123
TS	13905	T-1A	US 12 20 45 LaGrange Rd	Burlington Ave Hillgrove Ave	LaGrange	CO	1124
TS	13910	T-1A	US 12 20 45 LaGrange Rd	US 34 Ogden Ave	LaGrange	CO	1125
TS	13915	T-1A	US 12 20 45 LaGrange Rd	Harding Ave	LaGrange Park	CO	1126
TS	13920	T-1A	US 12 20 45 LaGrange Rd	Homestead Rd	LaGrange Park	CO	1127
TS	13923	T-1A	31st St	Brainard Ave	LaGrange Park	CO	1128
TS	13925	T-1A	31st St	Forest Ave	LaGrange Park	CO	1129

TS	13930	T-1A	31st St	Raymond Ave Harrison St	LaGrange Park	CO	1130
TS	14205	T-1A	5th Ave	Chicago Ave	Maywood	CO	1131
TS	14215	T-1A	17th Ave	Madison Ave	Maywood	CO	1132
TS	14220	T-1A	9th Ave	Lake St	Maywood	CO	1133
TS	14245	T-1A	9th Ave	Chicago Ave	Maywood	CO	1134
TS	14265	T-1A	IL 64 North Ave	15th Ave	Melrose Park	CO	1135
TS	14270	T-1A	Golf Rd	Narragansett Ave	Morton Grove	CO	1136
TS	14275	T-1A	IL 43 IL 58 Waukegan Rd	Emerson St	Morton Grove	CO	1137
TS	14280	T-1A	IL 43 IL 58 Waukegan Rd	Beckwith Rd	Morton Grove	CO	1138
TS	14285	T-1A	IL 58 Dempster St	Prairie View Dr Park Dr	Morton Grove	CO	1139
TS	14325	T-1A	Oakton St	Austin Ave	Morton Grove	CO	1140
TS	14330	T-1A	Oakton St	Menard Ave	Morton Grove	CO	1141
TS	14375	T-1A	IL 171 Cumberland Ave	Foster Ave	Norridge	CO	1142
TS	14395	T-1A	IL 43 Harlem Ave	Cullom Ave	Norridge	CO	1143
TS	14400	T-1A	IL 43 Waukegan Rd	Walters Ave	Northbrook	CO	1144
TS	14402	T-1A	IL 43 Waukegan Rd	Voltz Rd	Northbrook	CO	1145
TS	14430	T-1A	IL 43 Waukegan Rd	Shermer Rd	Northbrook	CO	1146
TS	14485	T-1A	Winnetka Rd	Hibbard Rd	Northfield	CO	1147
TS	14715	T-1A	Palatine Rd	Smith Rd	Palatine	CO	1148
TS	14720	T-1A	Palatine Rd	Brockway St	Palatine	CO	1149
TS	14725	T-1A	Palatine Rd	Plum Grove Rd	Palatine	CO	1150
TS	14730	T-1A	Hicks Rd	First Bank Dr Palatine Mall	Palatine	CO	1151
TS	14741	T-1A	IL 62 Algonquin Rd	Carriage Way Essex Way	Rolling Meadows	CO	1152
TS	14744	T-1A	IL 62 Algonquin Rd	Weber Rd Old Wilke Rd	Rolling Meadows	CO	1153
TS	14750	T-1A	IL 62 Algonquin Rd	Hammond Dr	Schaumburg	CO	1154
TS	14755	T-1A	IL 62 Algonquin Rd	Motorola E Dr Village Tree	Schaumburg	CO	1155
TS	14760	T-1A	IL 62 Algonquin Rd	Motorola W Dr Plum Grove Rd	Schaumburg	CO	1156
TS	14765	T-1A	IL 62 Algonquin Rd	Thoreau Dr Thorntree Ln	Schaumburg	CO	1157
TS	14780	T-1A	IL 62 Algonquin Rd	Meacham Rd	Schaumburg	CO	1158
TS	14820	T-1A	Niles Center Rd	Howard St	Skokie	CO	1159
TS	14835	T-1A	Touhy Ave	Niles Center Rd Carpenter Rd	Skokie	CO	1160
TS	14840	T-1A	Touhy Ave	Laramie Ave	Skokie	CO	1161
TS	14845	T-1A	Touhy Ave	Leclaire Ave	Skokie	CO	1162
TS	14855	T-1A	US 12 45 Mannheim Rd	Hirsch Ave Soffel Ave	Stone Park	CO	1163
TS	14861	T-1A	IL 171 Archer Ave	Derby Rd	Lemont	CO	1164
TS	14863	T-1A	123rd St McCarthy Rd	Derby Rd	Lemont	CO	1165
TS	15105	T-1A	US 12 45 Mannheim Rd	Dorchester Ave Balmoral Ave	Westchester	CO	1166
TS	15120	T-1A	US 12 20 45 LaGrange Rd	Canterbury St	Westchester	CO	1167

TS	15320	T-1A	Gren Bay Rd	Winnetka Ave	Winnetka	CO	1168
TS	20341	T-1A	Touhy Ave	Lawndale Ave	Lincolnwood	CO	1169
TS	20345	T-1A	Touhy Ave	Lincolnwood Town Ctr Ent	Lincolnwood	CO	1170
TS	20355	T-1A	Niles Center Rd Carpenter Rd	Village Crossing Ent D	Skokie	CO	1171
TS	20365	T-1A	US 6 159th St	91st Ave Park Hill Dr	Orland Hills	CO	1172
TS	20366	T-1A	IL 50 IL 83 Cicero Ave	137th St	Crestwood	CO	1173
TS	20380	T-1A	US 14 Northwest Hwy	Ela Rd	Barrington	CO	1174
TS	20385	T-1A	Barrington Rd	Bender Rd East River Rd	Des Plaines	CO	1175
TS	20395	T-1A	McCormick Blvd	Lincolnwood Town Center	Lincolnwood	CO	1176
TS	20400	T-1A	Barrington Rd	St Alexius Ent Hoffman Medical Ent	Hoffman Estates	CO	1177
TS	20402	T-1A	IL 58 Golf Rd	Hoffman Estates SC	Hoffman Estates	CO	1178
TS	20405	T-1A	US 45 DesPlaines River Rd	US 45 IL 21 Milwaukee Ave	Prospect Heights	CO	1179
TS	20435	T-1A	IL 50 Cicero Ave	24th St	Cicero	CO	1180
TS	20480	T-1A	Palatine Rd	Roselle Rd	Inverness	CO	1181
TS	20490	T-1A	US 6 159th St	108th Ave	Orland Park	CO	1182
TS	20491	T-1A	US 6 159th St	Ravinia Ave	Orland Park	CO	1183
TS	20495	T-1A	IL 50 Cicero Ave	120th St	Alsip	CO	1184
TS	20525	T-1A	IL 171 Archer Ave	Bulldog Dr 57th St	Summit	CO	1185
TS	20555	T-1A	Waukegan Rd	Niles Civic Center Plaza	Niles	CO	1186
TS	20560	T-1A	US 6 Wolf Rd	167th St	Orland Park	CO	1187
TS	20575	T-1A	US 20 Lake St	Walnut Ave	Hanover Park	CO	1188
TS	20590	T-1A	US 14 Northwest Hwy	First Bank Ent	Palatine	CO	1189
TS	20605	T-1A	I 290 Eisenhower Expy West Ramp Entrance	Biesterfield Rd	Elk Grove	CO	1190
TS	20610	T-1A	I 290 Eisenhower Expy East Ramp Exit	Biesterfield Rd	Elk Grove	CO	1191
TS	20615	T-1A	Brainard Ave	Hegewisch Metra Parking L	Burnham	CO	1192
TS	20935	T-1A	Touhy Ave	Village Crossing SC Ent C	Niles	CO	1193
TS	20965	T-1A	127th St	Kostner Ave	Alsip	CO	1194
TS	20986	T-1A	Torrence Ave	Joe Orr Rd	Lynwood	CO	1195
TS	21015	T-1A	IL 50 Cicero Ave	105th St	Oak Lawn	CO	1196
TS	21100	T-1A	IL 83 Old McHenry Rd	Lexington Dr	Wheeling	CO	1197
TS	21125	T-1A	IL 58 Golf Rd	Golf Glen Shopping Center	Niles	CO	1198
TS	21175	T-1A	31st St	Mayfair Ave	Westchester	CO	1199
TS	21200	T-1A	IL 68 Dundee Rd	Huntington Lane Lake Blvd	Wheeling/Buffalo Grove	CO	1200
TS	21210	T-1A	Lake Cook Rd	Ela Rd	Barrington	CO	1201
TS	21220	T-1A	111th St	Austin Ave	Chicago Ridge	CO	1202

TS	21225	T-1A	Meacham Rd	American Ln	Schaumburg	CO	1203
TS	21230	T-1A	Meacham Rd	Remington Ln	Schaumburg	CO	1204
TS	21235	T-1A	IL 58 Golf Rd	Basswood Rd	Schaumburg	CO	1205
TS	21237	T-1A	IL 58 Golf Rd	Wilkening Rd	Schaumburg	CO	1206
TS	21280	T-1A	Barrington Rd	Buttitta Dr Laurie Ln	Hanover Park	CO	1207
TS	21285	T-1A	Barrington Rd	Ramblewood Dr	Hanover Park	CO	1208
TS	21290	T-1A	IL 58 Golf Rd	National Pkwy	Schaumburg	CO	1209
TS	21320	T-1A	IL 72 Higgins Rd	Spring Mill Road	Hoffman Estates	CO	1210
TS	21322	T-1A	IL 72 Higgins Rd	Grand Canyon Pkwy	Hoffman Estates	CO	1211
TS	21325	T-1A	IL 43 Harlem Ave	Oak Park Ave	Tinley Park	CO	1212
TS	21355	T-1A	IL 62 Algonquin Rd	Briarwood Dr	Mt Prospect	CO	1213
TS	21370	T-1A	IL 58 Golf Rd	Knollwood Dr	Hoffman Estates	CO	1214
TS	21375	T-1A	IL 58 Golf Rd	Harmon Blvd	Hoffman Estates	CO	1215
TS	21450	T-1A	IL 19 Irving Park Rd	Old Salem Rd	Hanover Park	CO	1216
TS	21473	T-1A	IL 171 Archer Ave	131st St	Lemont	CO	1217
TS	21475	T-1A	IL 171 Archer Ave	Bell Rd	Lemont	CO	1218
TS	21510	T-1A	I 90 NW Tlwy South Ramp	IL 59	Hoffman Estates	CO	1219
TS	21515	T-1A	IL 43 Harlem Ave	Vollmer Rd	Mokena	CO	1220
TS	21520	T-1A	IL 7 143rd St	IL 7 Wolf Rd	Orland Park	CO	1221
TS	21522	T-1A	IL 7 143rd St	108th St	Orland Park	CO	1222
TS	21523	T-1A	143rd St	Will Cook Rd	Orland Pk/Homer Glen	CO	1223
TS	21535	T-1A	I 90 NW Tlwy	IL 59 North Ramp Poplar Creek Ent	Hoffman Estates	CO	1224
TS	21537	T-1A	IL 59	Poplar Creek Entrance	Hoffman Estates	CO	1225
TS	21550	T-1A	IL 68 Dundee Rd	Barrington Middle School	Barrington	CO	1226
TS	21553	T-1A	IL 72 Higgins Rd	Prairie Stone Pkwy	Hoffman Estates	CO	1227
TS	21555	T-1A	IL 72 Higgins Rd	Sears E Ent Trillium Blvd	Hoffman Estates	CO	1228
TS	21557	T-1A	IL 72 Higgins Rd	Sears W Ent	Hoffman Estates	CO	1229
TS	21560	T-1A	IL 72 Higgins Rd	Old Sutton Rd Theater Ent	Hoffman Estates	CO	1230
TS	21595	T-1A	IL 62 Algonquin Rd	Newport Dr	Rolling Meadows	CO	1231
TS	21600	T-1A	Pfingsten Rd	Glenlake Dr Glenbrook Hospistol	Glenview	CO	1232
TS	21610	T-1A	Meacham Rd	Motorola N Dr Drummer Dr	Schaumburg	CO	1233
TS	21650	T-1A	IL 50 Cicero Ave	71st St WalMart Ent	Bedford Park	CO	1234
TS	21711	T-1A	Elgin O'Hare W Frontage	Rodenburg Rd	Schaumburg	CO	1235
TS	21712	T-1A	Elgin O'Hare E Frontage	Rodenburg Rd	Schaumburg	CO	1236
TS	21720	T-1A	Elgin O'Hare E Frontage	Wright Blvd	Schaumburg	CO	1237
TS	21721	T-1A	Elgin O'Hare W Frontage	Wright Blvd	Schaumburg	CO	1238
TS	21775	T-1A	Montrolse Ave	Neenah Ave	Harwood Heights	CO	1239
TS	21795	T-1A	Western Ave	Joe Orr Rd Country Club Dr	Olympia Fields	CO	1240

TS	21805	T-1A	Palatine Rd	Chambers Dr Jewel Osco Ent	Hoffman Estates	CO	1241
TS	21845	T-1A	Main St in Barrington Lakes	Dundee Ave	Barrington	CO	1242
TS	21855	T-1A	IL 43 Waukegan Rd	Overlook Dr Kraft Food Ent	Glenview	CO	1243
TS	21890	T-1A	Biesterfield Rd	Beisner Rd	Elk Grove	CO	1244
TS	21920	T-1A	US 6 159th St	Jewel Orland Town Center	Orland Park	CO	1245
TS	21955	T-1A	IL 72 Higgins Rd	National Pkwy	Schaumburg	CO	1246
TS	22035	T-1A	75th St	Willow Springs Rd	Willow Springs	CO	1247
TS	22065	T-1A	22nd St Cermak Rd	14th St	North Riverside	CO	1248
TS	22095	T-1A	104th Ave	123rd St McCarthy Rd	Palos Park	CO	1249
TS	22120	T-1A	17th Ave	19th St	Broadview	CO	1250
TS	22121	T-1A	17th Ave	23rd St	North Riverside	CO	1251
TS	22150	T-1A	Devon Ave	Greenwood Ave	Park Ridge	CO	1252
TS	22165	T-1A	25th Ave	Armitage Ave	Melrose Park	CO	1253
TS	22195	T-1A	127th St	State St	Lemont	CO	1254
TS	22215	T-1A	US 12 20 45 LaGrange Rd	58th St	Countryside	CO	1255
TS	22225	T-1A	IL 58 Golf Rd	Rohrsen Rd	Hoffman Estates	CO	1256
TS	22230	T-1A	IL 62 Algonquin Rd	Willow Creek Church Dr Willowmere Dr	South Barrington	CO	1257
TS	22235	T-1A	Arlington Heights Rd	Bennett Rd	Arlington Heights	CO	1258
TS	22240	T-1A	IL 62 Algonquin Rd	Penny Rd	Hoffman Estates	CO	1259
TS	22263	T-1A	IL 43 Harlem Ave	191st St	Tinley Park	CO	1260
TS	550	T-1A	IL 83	22nd St	Oakbrook Terrace	DU	1261
TS	565	T-1A	IL 83	63rd St	Willowbrook	DU	1262
TS	570	T-1A	IL 83	75th St	Willowbrook	DU	1263
TS	580	T-1A	IL 83	Bluff Rd	Willowbrook	DU	1264
TS	585	T-1A	IL 83	Central Ave	Burr Ridge	DU	1265
TS	587	T-1A	IL 83	91st St	Darien	DU	1266
TS	605	T-1A	IL 83	Elmhurst SC Kmart	Elmhurst	DU	1267
TS	615	T-1A	IL 83	Midway Dr	Willowbrook	DU	1268
TS	620	T-1A	IL 83	Hodges Rd Oakbrook Ct	Oakbrook	DU	1269
TS	625	T-1A	IL 83	16th St	Oakbrook	DU	1270
TS	630	T-1A	IL 83	Chicago Elmhurst Stone	Elmhurst	DU	1271
TS	635	T-1A	IL 83	Plainfield Rd	Willowbrook	DU	1272
TS	637	T-1A	IL 83	72nd Ct	Willowbrook	DU	1273
TS	640	T-1A	IL 83	Riverside Dr	Oak Brook Ter/Elmhurst	DU	1274
TS	645	T-1A	IL 83	St. Charles Rd	Elmhurst	DU	1275
TS	990	T-1A	IL 53 Rohlwing Rd	Nordic Rd	Itasca	DU	1276
TS	992	T-1A	IL 53 Rohlwing Rd	Spring Lake Dr	Itasca	DU	1277
TS	995	T-1A	IL 53 Rohlwing Rd	Ardmore Ave	Itasca	DU	1278

TS	1989	T-1A	IL 19 Irving Park Rd	South Access Rd	Bensenville	DU	1279
TS	4595	T-1A	US 20 Lake St	Fairfield Ct	Bloomingdale	DU	1280
TS	4600	T-1A	US 20 Lake St	Bloomingdale Rd	Bloomingdale	DU	1281
TS	4605	T-1A	US 20 Lake St	Circle Ave	Bloomingdale	DU	1282
TS	4610	T-1A	US 20 Lake St	Springbrook Center	Bloomingdale	DU	1283
TS	4670	T-1A	IL 59	Stearns Rd	Bartlett	DU	1284
TS	5985	T-1A	I 290 Ramps K & O	US 20 Lake St	Elmhurst	DU	1285
TS	5990	T-1A	I 290 Eisenhower Expy	York Rd N Rmp Winthrop	Elmhurst	DU	1286
TS	5995	T-1A	I 290 Eisenhower Expy	US 20 York Rd S Ramp Lake St	Elmhurst	DU	1287
TS	6015	T-1A	US 20 Lake St	IL 83 W Ramps K & M	Addison/Elmhurst	DU	1288
TS	6020	T-1A	US 20 Lake St	Addison Rd	Addison	DU	1289
TS	6025	T-1A	US 20 Lake St	Church St	Elmhurst/Addison	DU	1290
TS	6030	T-1A	US 20 Lake St	Gary Ave	Roselle	DU	1291
TS	6035	T-1A	US 20 Lake St	Glen Ellyn Rd	Bloomingdale	DU	1292
TS	6037	T-1A	US 20 Lake St	Euclid Ave Lake View Dr	Bloomingdale	DU	1293
TS	6040	T-1A	US 20 Lake St	IL 83 Grand E Ramps J & L	Elmhurst	DU	1294
TS	6043	T-1A	US 20 Lake St	Greenbriar Dr	Addison	DU	1295
TS	6045	T-1A	US 20 Lake St	Medinah Rd	Bloomingdale	DU	1296
TS	6046	T-1A	US 34 Ogden Ave	Commons Dr	Aurora	DU	1297
TS	6049	T-1A	US 34 Ogden Ave	Eola Rd	Aurora	DU	1298
TS	6050	T-1A	US 34 Ogden Ave	Montgomery Rd	Aurora	DU	1299
TS	6060	T-1A	US 20 Lake St	IL 53 Rohlwing Rd	Addison	DU	1300
TS	6061	T-1A	IL 53 Rohlwing Rd	Mall Ent	Addison	DU	1301
TS	6062	T-1A	IL 53 Rohlwing Rd	Woodland Ave	Addison	DU	1302
TS	6065	T-1A	US 20 Lake St	Springfield Dr	Roselle	DU	1303
TS	6070	T-1A	US 20 Lake St	Villa Ave Wood Dale Rd	Addison	DU	1304
TS	6075	T-1A	US 20 Lake St	Walnut St	Elmhurst	DU	1305
TS	6080	T-1A	US 20 Lake St	West Ave	Elmhurst/Addison	DU	1306
TS	6085	T-1A	US 20 Lake St	Rosedale Ave	Bloomingdale	DU	1307
TS	6092	T-1A	IL 59	87th St White Eagle Dr	Aurora	DU	1308
TS	6095	T-1A	US 34 Ogden Ave	Cass Ave	Westmont	DU	1309
TS	6100	T-1A	US 34 Ogden Ave	Pasquinelli Dr Middaugh Dr	Westmont	DU	1310
TS	6110	T-1A	US 34 Ogden Ave	IL 83 West Ramps A & B	Westmont	DU	1311
TS	6115	T-1A	US 34 Ogden Ave	IL 83 East Ramps C & D	Hinsdale	DU	1312
TS	6116	T-1A	US 34 Ogden Ave	Salt Creek Ln Oak St	Hinsdale	DU	1313
TS	6118	T-1A	US 34 Ogden Ave	York Rd	Hinsdale	DU	1314
TS	6120	T-1A	US 34 Ogden Ave	Cross St	Downers Grove	DU	1315
TS	6125	T-1A	US 34 Ogden Ave	Belmont Rd Finley Rd	Downers Grove	DU	1316

TS	6130	T-1A	US 34 Ogden Ave	Madison St	Hinsdale	DU	1317
TS	6135	T-1A	US 34 Ogden Ave	Oakwood Rd	Westmont	DU	1318
TS	6140	T-1A	IL 19 Irving Park Rd	Marshall Rd	Bensenville	DU	1319
TS	6145	T-1A	IL 19 Irving Park Rd	Medinah Rd	Roselle	DU	1320
TS	6155	T-1A	IL 19 Irving Park Rd	IL 53 Rohlwing Rd	Itasca	DU	1321
TS	6156	T-1A	IL 53 Rohlwing Rd	Bryn Mawer Ave	Itasca	DU	1322
TS	6160	T-1A	IL 19 Irving Park Rd	Spruce Ave	Bensenville	DU	1323
TS	6164	T-1A	IL 19 Irving Park Rd	Bloomingdale Rd	Itasca	DU	1324
TS	6165	T-1A	IL 19 Irving Park Rd	Walnut St	Itasca	DU	1325
TS	6170	T-1A	IL 19 Irving Park Rd	Prospect Ave	Wood Dale	DU	1326
TS	6180	T-1A	IL 38 Roosevelt Rd	Joliet Rd	West Chicago	DU	1327
TS	6190	T-1A	IL 38 Roosevelt Rd	Meyers Rd	Lombard	DU	1328
TS	6195	T-1A	IL 38 Roosevelt Rd	Summit Ave	Oakbrook terrace	DU	1329
TS	6200	T-1A	IL 38 Roosevelt Rd	Winfield Rd	Winfield	DU	1330
TS	6205	T-1A	IL 38 Roosevelt Rd	IL 59 N Ramp Dayton Ave	West Chicago	DU	1331
TS	6206	T-1A	IL 38 Roosevelt Rd	IL 59 S Ramp	West Chicago	DU	1332
TS	6210	T-1A	IL 38 Roosevelt Rd	Courtyard Shppping Center	Oakbrook Terrace	DU	1333
TS	6215	T-1A	IL 53	IL 64 North Ave	Lombard	DU	1334
TS	6220	T-1A	IL 53	75th St	Woodridge	DU	1335
TS	6225	T-1A	IL 53	Hobson Rd	Woodridge	DU	1336
TS	6230	T-1A	IL 53	Park Ave	Glen ellyn	DU	1337
TS	6240	T-1A	IL 53	Summerhill Dr Bell Tech Ent	Woodridge	DU	1338
TS	6245	T-1A	IL 53	83rd St	Woodridge	DU	1339
TS	6250	T-1A	IL 53	59th St Four Lakes Ent	Lisle	DU	1340
TS	6255	T-1A	IL 53	Woodridge Dr Seven Bridges Ent	Woodridge	DU	1341
TS	6256	T-1A	IL 53	High Trail Seven Bridges Ent	Woodridge	DU	1342
TS	6260	T-1A	IL 56 Butterfield Rd	IL 59	Warrenville	DU	1343
TS	6265	T-1A	IL 56 Butterfield Rd	22nd St	Oakbrook	DU	1344
TS	6270	T-1A	IL 56 Butterfield Rd	Batavia Rd	Warrenville	DU	1345
TS	6275	T-1A	IL 56 Butterfield Rd	Finley Rd	Downers grove	DU	1346
TS	6290	T-1A	IL 56 Butterfield Rd	Lambert Ave	Wheaton	DU	1347
TS	6293	T-1A	IL 56 Butterfield Rd	Fountain Squarte Rd	Lombard	DU	1348
TS	6295	T-1A	IL 56 Butterfield Rd	Meyers Rd	Oakbrook	DU	1349
TS	6300	T-1A	IL 56 Butterfield Rd	Midwest Rd Summit Ave	Oakbrook terrace	DU	1350
TS	6305	T-1A	IL 56 Butterfield Rd	Park Blvd	Glen ellyn	DU	1351
TS	6310	T-1A	IL 56 Butterfield Rd	Fairfield Ave	Lombard	DU	1352
TS	6315	T-1A	IL 56 Butterfield Rd	Naperville Rd	Wheaton	DU	1353
TS	6320	T-1A	IL 56 Butterfield Rd	Winfield Rd	Winfield	DU	1354
TS	6325	T-1A	IL 56 Butterfield Rd	Eola Rd	Aurora	DU	1355

TS	6330	T-1A	IL 56 Butterfield Rd	Herrick Rd Weisbrook Rd	Wheaton	DU	1356
TS	6335	T-1A	IL 56 Butterfield Rd	Orchard Rd	Wheaton	DU	1357
TS	6340	T-1A	IL 56 Butterfield Rd	Glenbard South High School	Glen ellyn	DU	1358
TS	6345	T-1A	IL 56 Butterfield Rd	Trans Am Plaza	Oakbrook terrace	DU	1359
TS	6350	T-1A	IL 56 Butterfield Rd	Woodcreek Dr Lloyd Ave	Downers grove	DU	1360
TS	6352	T-1A	IL 56 Butterfield Rd	Home Depot Ent Esplanade Ent	Downers grove	DU	1361
TS	6355	T-1A	IL 64 North Ave	IL 59	West Chicago	DU	1362
TS	6360	T-1A	IL 59	75th St	Aurora	DU	1363
TS	6362	T-1A	IL 59	Beebe Dr Costco Entrance	Naperville	DU	1364
TS	6365	T-1A	IL 59	Army Trail Rd	Bartlett/Wayne	DU	1365
TS	6370	T-1A	IL 59	Batavia Rd	Warrenville	DU	1366
TS	6377	T-1A	IL 59	Struckman Blvd	Bartlett	DU	1367
TS	6378	T-1A	IL 59	Apple Valley Dr Home Depot Ent	Bartlett	DU	1368
TS	6379	T-1A	IL 59	Woodland Hills Parkway	Bartlett	DU	1369
TS	6390	T-1A	IL 59	Forest Blvd	West Chicago	DU	1370
TS	6395	T-1A	IL 59	Continental Dr Meadow Dr	Warrenville	DU	1371
TS	6400	T-1A	IL 64 North Ave	IL 83	Elmhurst	DU	1372
TS	6405	T-1A	IL 64 North Ave	Addison Rd	Villa park	DU	1373
TS	6410	T-1A	IL 64 North Ave	Ardmore Ave	Villa park	DU	1374
TS	6415	T-1A	IL 64 North Ave	Berteau Ave	Elmhurst	DU	1375
TS	6420	T-1A	IL 64 North Ave	Bloomingdale Rd	Glendale Heights	DU	1376
TS	6425	T-1A	IL 64 North Ave	County Farm Rd	Carol Stream	DU	1377
TS	6430	T-1A	IL 64 North Ave	Emroy Ave Melrose Ave	Elmhurst	DU	1378
TS	6435	T-1A	IL 64 North Ave	Gary Ave	Carol Stream	DU	1379
TS	6440	T-1A	IL 64 North Ave	Grace St	Lombard	DU	1380
TS	6445	T-1A	IL 64 North Ave	Kuhn Rd	Carol Stream	DU	1381
TS	6446	T-1A	IL 64 North Ave	Bennett Dr	Hometowne	DU	1382
TS	6450	T-1A	IL 64 North Ave	Main St Glen Ellyn Rd	Glendale Heights	DU	1383
TS	6455	T-1A	IL 64 North Ave	Main St in Lombard	Lombard	DU	1384
TS	6456	T-1A	IL 64 North Ave	Lombard Rd	Lombard	DU	1385
TS	6460	T-1A	IL 64 North Ave	Myrtle Ave	Elmhurst	DU	1386
TS	6465	T-1A	IL 64 North Ave	Schmale Rd	Carol Stream	DU	1387
TS	6470	T-1A	IL 64 North Ave	Michigan Ave North Park Mall Ent	Villa park	DU	1388
TS	6475	T-1A	IL 64 North Ave	Swift Rd	Lombard	DU	1389
TS	6480	T-1A	IL 64 North Ave	Villa Ave	Villa Park	DU	1390
TS	6490	T-1A	IL 64 North Ave	West St	Elmhurst	DU	1391
TS	6495	T-1A	IL 64 North Ave	Westwood Ave	Addison	DU	1392

TS	6500	T-1A	IL 64 North Ave	York Rd	Elmhurst	DU	1393
TS	6505	T-1A	IL 64 North Ave	Elmhurst Plaza	Villa Park	DU	1394
TS	7695	T-1A	US 20 Lake St	Bearflag Dr	Hanover Park	DU	1395
TS	7800	T-1A	IL 56 Butterfield Rd	Macarthur Dr	Oakbrook terrace	DU	1396
TS	7830	T-1A	IL 53	Maple Ave	Lisle	DU	1397
TS	7835	T-1A	IL 53	IL 56 Butterfield Rd	Glen ellyn	DU	1398
TS	7850	T-1A	IL 53 Rohlwing Rd	Army Trail Rd	Addison	DU	1399
TS	7851	T-1A	IL 53 Rohlwing Rd	Mitchel Ct	Addison	DU	1400
TS	7855	T-1A	US 34 Ogden Ave	Main St in Lisle	Lisle	DU	1401
TS	7870	T-1A	US 20 Lake St	Bartels Rd Arlington Rd	Hanover park	DU	1402
TS	7875	T-1A	US 20 Lake St	Bryn Mawr Ave	Roselle	DU	1403
TS	8225	T-1A	IL 38 Roosevelt Rd	County Farm Rd	Wheaton	DU	1404
TS	8325	T-1A	15th St	Highland Blvd	Lombard	DU	1405
TS	8370	T-1A	US 34 Ogden Ave	Fairview Ave	Downers Grove	DU	1406
TS	8375	T-1A	22nd St	Midwest Rd Summit Ave	Oakbrook Terrace	DU	1407
TS	8377	T-1A	22nd St	Shops of Oak Brook	Oakbrook	DU	1408
TS	8830	T-1A	US 34 Ogden Ave	Washington St	Westmont	DU	1409
TS	8850	T-1A	IL 59	James St	West Chicago	DU	1410
TS	8853	T-1A	IL 59	Hawthorn Ln	West Chicago	DU	1411
TS	8855	T-1A	IL 59	Washington St	West Chicago	DU	1412
TS	8860	T-1A	IL 59	Main St in West Chicago	West Chicago	DU	1413
TS	8970	T-1A	IL 53	22nd St	Glen Ellyn	DU	1414
TS	9035	T-1A	IL 19 Irving Park Rd	Roselle Rd	Roselle	DU	1415
TS	9037	T-1A	IL 19 Irving Park Rd	Lawerence Ave	Roselle	DU	1416
TS	9040	T-1A	IL 19 Irving Park Rd	Park St	Roselle	DU	1417
TS	9100	T-1A	IL 19 Irving Park Rd	Maple Ave	Roselle	DU	1418
TS	10910	T-1A	US 34 Ogden Ave	Warwick Shopping Center Entrance	Westmont	DU	1419
TS	11105	T-1A	US 20 Lake St	Swift Rd	Addison	DU	1420
TS	11125	T-1A	Madison St	Joliet Rd I 55 Frontage Rd	Burr Ridge	DU	1421
TS	11180	T-1A	IL 38 Roosevelt Rd	Fairfield Ave	Lombard	DU	1422
TS	11390	T-1A	IL 64 North Ave	Menards Glendale Square	Glendale Heights	DU	1423
TS	11410	T-1A	IL 56 Butterfield Rd	Downers Dr	Downers Grove	DU	1424
TS	11415	T-1A	IL 38 Roosevelt Rd	Lombard SC Franks Nursery	Lombard	DU	1425
TS	11420	T-1A	US 34 Ogden Ave	Saratoga Ave	Downers Grove	DU	1426
TS	11425	T-1A	US 34 Ogden Ave	Main St	Downers Grove	DU	1427
TS	11655	T-1A	IL 53	Main St	Lisle	DU	1428
TS	11660	T-1A	IL 53	Short St	Lisle	DU	1429
TS	11662	T-1A	IL 53	I 88 North Ramp	Lisle	DU	1430
TS	11665	T-1A	IL 53	Warrenville Rd	Lisle	DU	1431

TS	11670	T-1A	IL 53	Burlington Ave	Lisle	DU	1432
TS	11675	T-1A	US 34 Ogden Ave	Blackhawk Dr	Westmont	DU	1433
TS	11680	T-1A	US 34 Ogden Ave	IL 53 North Ramp	Lisle	DU	1434
TS	11685	T-1A	US 34 Ogden Ave	IL 53 South Ramp	Lisle	DU	1435
TS	11825	T-1A	US 34 Ogden Ave	Swartz Ave	Lisle	DU	1436
TS	11830	T-1A	US 34 Ogden Ave	Yackley Rd	Lisle	DU	1437
TS	11835	T-1A	US 34 Ogden Ave	Indiana Ave Western Ave	Lisle	DU	1438
TS	11840	T-1A	US 34 Ogden Ave	Old Tavern Rd	Lisle	DU	1439
TS	11970	T-1A	IL 59	83rd St Montgomery Rd	Aurora	DU	1440
TS	12020	T-1A	IL 59	Joliet Rd	West Chicago	DU	1441
TS	12021	T-1A	IL 59	Mack Rd	Warrenville	DU	1442
TS	12215	T-1A	IL 83	67th St	Willowbrook	DU	1443
TS	12250	T-1A	IL 64 North Ave	I 355 NS Tlwy E Rmp	Lombard	DU	1444
TS	12255	T-1A	IL 64 North Ave	I 355 NS Tlwy W Rmp	Lombard	DU	1445
TS	12320	T-1A	IL 38 Roosevelt Rd	Finley Rd	Lombard	DU	1446
TS	12325	T-1A	IL 38 Roosevelt Rd	Main St in Lombard	Lombard	DU	1447
TS	12335	T-1A	US 20 Lake St	I 355 N S Tlwy E Ramp	Addison	DU	1448
TS	12340	T-1A	US 20 Lake St	I 355 N S Tlwy W Ramp	Addison	DU	1449
TS	12373	T-1A	IL 64 North Ave	Atlantic Dr	West Chicago	DU	1450
TS	12375	T-1A	IL 64 North Ave	Prince Crossing Rd	West Chicago	DU	1451
TS	12376	T-1A	IL 64 North Ave	Fair Oaks Rd	Carol Stream	DU	1452
TS	12420	T-1A	US 34 Ogden Ave	I 355 N S Tlwy E Ramp	Lisle	DU	1453
TS	12421	T-1A	US 34 Ogden Ave	I 355 N S Tlwy W Ramp	Lisle	DU	1454
TS	12424	T-1A	IL 38 Roosevelt Rd	Baker Hill Dr	Glen Ellyn	DU	1455
TS	12425	T-1A	IL 38 Roosevelt Rd	I 355 N S Tlwy E Ramp	Lombard	DU	1456
TS	12426	T-1A	IL 38 Roosevelt Rd	I 355 N S Tlwy W Ramp	Glen Ellyn	DU	1457
TS	12500	T-1A	US 20 Lake St	Itasca Rd	Addison	DU	1458
TS	12505	T-1A	US 20 Lake St	Lombard Ave	Addison	DU	1459
TS	12510	T-1A	US 20 Lake St	Mill Rd	Addison	DU	1460
TS	12513	T-1A	US 20 Lake St	Marcus Dr	Addison	DU	1461
TS	12515	T-1A	US 20 Lake St	Kennedy Dr	Addison	DU	1462
TS	12520	T-1A	IL 53 Rohlwing Rd	Fullerton Ave	Addison	DU	1463
TS	13770	T-1A	US 20 Lake St	Greenbrook Blvd	Hanover Park	DU	1464
TS	14065	T-1A	IL 38 Roosevelt Rd	Highland Ave	Lombard	DU	1465
TS	14491	T-1A	22nd St	Oak Brook Center East	Oakbrook	DU	1466
TS	14492	T-1A	22nd St	Oak Brook Center West	Oakbrook	DU	1467
TS	14493	T-1A	22nd St	Spring Rd	Oakbrook	DU	1468
TS	14494	T-1A	22nd St	McDonald Drive	Oakbrook	DU	1469

TS	14495	T-1A	22nd St Cermak Rd	York Rd	Oakbrook	DU	1470
TS	14496	T-1A	22nd St	Jorie Blvd	Oakbrook	DU	1471
TS	14497	T-1A	22nd St Cermak Rd	Windsor Dr	Oakbrook	DU	1472
TS	15090	T-1A	IL 19 Irving Park Rd	Addison Rd	Wood Dale	DU	1473
TS	15100	T-1A	IL 19 Irving Park Rd	Wooddale Rd	Wood Dale	DU	1474
TS	15175	T-1A	IL 56 Butterfield Rd	Bradford Dr	Wheaton	DU	1475
TS	15178	T-1A	IL 56 Butterfield Rd	Leask Lane	Wheaton	DU	1476
TS	15230	T-1A	IL 38 Roosevelt Rd	Lorraine Rd	Wheaton	DU	1477
TS	15235	T-1A	IL 38 Roosevelt Rd	President St	Wheaton	DU	1478
TS	15240	T-1A	IL 38 Roosevelt Rd	Naperville Rd	Wheaton	DU	1479
TS	15245	T-1A	IL 38 Roosevelt Rd	Main in Wheaton	Wheaton	DU	1480
TS	15250	T-1A	IL 38 Roosevelt Rd	West St Warrenville Rd	Wheaton	DU	1481
TS	15255	T-1A	IL 38 Roosevelt Rd	Carleton Ave	Wheaton	DU	1482
TS	15260	T-1A	IL 38 Roosevelt Rd	Adare Dr Saddle Rd	Wheaton	DU	1483
TS	15261	T-1A	IL 38 Roosevelt Rd	Marian Joy Ent	Wheaton	DU	1484
TS	15305	T-1A	IL 38 Roosevelt Rd	Villa Oaks Dr	Oakbrook Terrace	DU	1485
TS	15310	T-1A	IL 38 Roosevelt Rd	Ardmore Ave	Villa Park	DU	1486
TS	15315	T-1A	IL 64 North Ave	Westmore Rd	Villa Park	DU	1487
TS	20330	T-1A	IL 53	DuPage Blvd Baker Hill Dr	Glen ellyn	DU	1488
TS	20335	T-1A	IL 53	Pershing Ave	Glen ellyn	DU	1489
TS	20370	T-1A	IL 56 Butterfield Rd	Cromwell Dr	Wheaton	DU	1490
TS	20625	T-1A	IL 56 Butterfield Rd	I 355 N S Tlwy E Ramp	Downers grove	DU	1491
TS	20630	T-1A	IL 56 Butterfield Rd	I 355 N S Tlwy W Ramp	Downers grove	DU	1492
TS	20631	T-1A	IL 38 Roosevelt Rd	Nicoll Way	Glen Ellyn	DU	1493
TS	20632	T-1A	IL 38 Roosevelt Rd	Park Blvd	Glen Ellyn	DU	1494
TS	20634	T-1A	IL 38 Roosevelt Rd	Lambert Rd	Glen Ellyn	DU	1495
TS	20660	T-1A	IL 56 Butterfield Rd	East Loop Dr	Wheaton	DU	1496
TS	21030	T-1A	22nd St	McArthur Dr Costco Ent	Oakbrook	DU	1497
TS	21035	T-1A	22nd St	Parkview Dr	Oakbrook	DU	1498
TS	21250	T-1A	IL 38 Roosevelt Rd	Blanchard St	Wheaton	DU	1499
TS	21255	T-1A	IL 38 Roosevelt Rd	Main Glen Ellyn	Glen Ellyn	DU	1500
TS	21395	T-1A	IL 64 North Ave	President St Fireside Dr	Carol Stream	DU	1501
TS	21505	T-1A	IL 53	Sheehan Ave	Glen ellyn	DU	1502
TS	21700	T-1A	US 34 Ogden Ave	Chelsea Ave US Post Office	Lisle	DU	1503
TS	21830	T-1A	US 34 Ogden Ave	Downers Plaza KMart	Downers Grove	DU	1504
TS	21870	T-1A	IL 56 Butterfield Rd	Maxant Dr WasteManagement Tech	Lombard	DU	1505
TS	21910	T-1A	US 20 Lake St	Elgin O'Hare	Hanover Park	DU	1506
TS	22025	T-1A	US 20 Lake St	Rodenburg Rd	Roselle	DU	1507
TS	22110	T-1A	IL 59	Ingalton Ave	West Chicago	DU	1508

TS	22115	T-1A	IL 59	Diversey Prkwy	West Chicago	DU	1509
TS	22125	T-1A	IL 59	Schick Rd	Bartlett	DU	1510
TS	22135	T-1A	IL 53 Rohlwing Rd	Sidney Ave	Lombard	DU	1511
TS	196	T-1A	IL 38	IL 47	Elburn	KA	1512
TS	197	T-1A	IL 47	IL 64	Lily Lake	KA	1513
TS	198	T-1A	IL 38	Meredith PL	Virgil Township	KA	1514
TS	670	T-1A	IL 25	Villa Ave	Elgin	KA	1515
TS	675	T-1A	US 20	IL 31 US 20 Bypass	Elgin	KA	1516
TS	677	T-1A	US 20	Nesler Rd	Elgin	KA	1517
TS	693	T-1A	US 20	Plank Rd Coombs Rd	Elgin	KA	1518
TS	700	T-1A	US 30 Baseline Rd	US 30 IL 47	Sugar Grove	KA	1519
TS	703	T-1A	IL 47	Keslinger Rd	Elburn	KA	1520
TS	710	T-1A	US 30	IL 31 South Ramp	Montgomery	KA	1521
TS	725	T-1A	US 30	Jericho Rd	Sugar Grove	KA	1522
TS	727	T-1A	US 30	Griffin Dr	Montgomery	KA	1523
TS	728	T-1A	US 30	Gordon Rd	Montgomery	KA	1524
TS	730	T-1A	US 30	Orchard Rd	Montgomery	KA	1525
TS	735	T-1A	IL 31	I 88 IL 56 EW Tlwy	North Aurora	KA	1526
TS	737	T-1A	IL 31	Oak St	North Aurora	KA	1527
TS	740	T-1A	IL 19	IL 25	Elgin	KA	1528
TS	745	T-1A	IL 25 River Rd	IL 58 Summit St	Elgin	KA	1529
TS	750	T-1A	IL 25 River Rd	IL 25 Wilson Ave	Batavia	KA	1530
TS	755	T-1A	IL 38	IL 25	Geneva	KA	1531
TS	760	T-1A	IL 25	IL 62 Algonquin Rd	Carpentersville	KA	1532
TS	765	T-1A	IL 25	IL 68 Dundee Rd	East Dundee	KA	1533
TS	770	T-1A	IL 25	IL 72 Higgins Rd	East Dundee	KA	1534
TS	775	T-1A	IL 25	Brandt Dr	Elgin	KA	1535
TS	785	T-1A	IL 25 Washington St	Wilson Ave	Batavia	KA	1536
TS	795	T-1A	IL 31	Third St	Geneva	KA	1537
TS	805	T-1A	IL 38	IL 31	Geneva	KA	1538
TS	815	T-1A	IL 31	Big Timber Rd	Elgin	KA	1539
TS	830	T-1A	IL 31	Middle St	Elgin	KA	1540
TS	833	T-1A	IL 31	Watkins US 30 North Ramp	Montgomery	KA	1541
TS	835	T-1A	IL 31	Webster St Aucutt Rd	Montgomery	KA	1542
TS	845	T-1A	IL 38	Eastside Ave	Geneva	KA	1543
TS	856	T-1A	IL 38	Bricher Rd 14th St	St Charles	KA	1544
TS	857	T-1A	IL 38	Peck Rd	St Charles	KA	1545
TS	858	T-1A	IL 38	Williamsburg Ave	Geneva	KA	1546
TS	859	T-1A	IL 38	La Fox St	Campton Hills	KA	1547
TS	860	T-1A	US 30	Cross St	Sugar Grove	KA	1548
TS	861	T-1A	US 30	Municipal Drive	Sugar Grove	KA	1549
TS	865	T-1A	IL 47	Galena Blvd	Sugar Grove	KA	1550

TS	868	T-1A	IL 47	Bliss Rd Wheeler Rd	Sugar Grove	KA	1551
TS	869	T-1A	IL 47	Waubonsee Dr	Sugar Grove	KA	1552
TS	870	T-1A	IL 64 Main St	Kirk Rd	St Charles	KA	1553
TS	871	T-1A	IL 47	Waubonsee Dr Old Oaks North Entrance	Sugar Grove	KA	1554
TS	872	T-1A	IL 56	Galena Blvd East Ramp	Aurora	KA	1555
TS	873	T-1A	IL 56	Galena Blvd West Ramp	Sugar Grove	KA	1556
TS	877	T-1A	IL 64 Main St	Peck Rd	St Charles	KA	1557
TS	878	T-1A	IL 64 North Ave	Burlington Rd	Wasco	KA	1558
TS	880	T-1A	IL 68 Penny Rd	IL 72 Higgins Rd	East Dundee	KA	1559
TS	883	T-1A	IL 68 Dundee Rd	Golfview Ln	Tritech	KA	1560
TS	885	T-1A	IL 72 Main St	River St	East Dundee	KA	1561
TS	890	T-1A	IL 72 Main St	Van Buren St	East Dundee	KA	1562
TS	895	T-1A	IL 72 Main St	1st St	West Dundee	KA	1563
TS	900	T-1A	IL 72 Main St	2nd St	West Dundee	KA	1564
TS	902	T-1A	IL 72 Higgins Rd	Reinking Rd	Pingree Grove	KA	1565
TS	905	T-1A	IL 72 Main St	Rock Rd	East Dundee	KA	1566
TS	4305	T-1A	IL 25	Golfview Ln	Carpentersville	KA	1567
TS	4310	T-1A	IL 25	King Rd	Carpentersville	KA	1568
TS	4315	T-1A	IL 25	Besinger Dr	Carpentersville	KA	1569
TS	4320	T-1A	IL 25	Helm Rd	Carpentersville	KA	1570
TS	4325	T-1A	IL 25	Robin Rd	Carpentersville	KA	1571
TS	4330	T-1A	IL 31	Chicago Rawhide Driveway	Elgin	KA	1572
TS	4390	T-1A	IL 25	Lake Marion Rd	Carpentersville	KA	1573
TS	4457	T-1A	IL 25	West Bartlett Rd	Bartlett	KA	1574
TS	4458	T-1A	IL 25	Kenyon Rd	Bartlet	KA	1575
TS	4640	T-1A	IL 31	Main St in Batavia	Batavia	KA	1576
TS	4642	T-1A	IL 31	Mooseheart Rd	Batavia	KA	1577
TS	4645	T-1A	IL 31	Wilson Ave	Batavia	KA	1578
TS	6052	T-1A	US 34 Ogden Ave	Copley Hospital Entrance	Aurora	KA	1579
TS	6053	T-1A	US 34 Ogden Ave	Ridge Rd Waterford Dr	Aurora	KA	1580
TS	7324	T-1A	IL 47	Huntley Crossing	Huntley	KA	1581
TS	7328	T-1A	IL 47	Regency Prkwy	Huntley	KA	1582
TS	7331	T-1A	IL 47	Freeman Rd	Huntley	KA	1583
TS	7332	T-1A	IL 47	Del Webb Ent	Huntley	KA	1584
TS	7333	T-1A	IL 47	Plank Rd	Plato	KA	1585
TS	7336	T-1A	IL 47 North Ramp	I 90	Huntley	KA	1586
TS	7337	T-1A	IL 47 South Ramp	I 90	Huntley	KA	1587
TS	7339	T-1A	IL 47	Big Timber Rd	Huntley	KA	1588
TS	8975	T-1A	IL 31	Illinois St	St Charles	KA	1589

TS	8980	T-1A	IL 64 Main St	Dunham Rd	St Charles	KA	1590
TS	8990	T-1A	IL 25	IL 64 North Ave	St Charles	KA	1591
TS	8992	T-1A	IL 64 Main St	Oak St	St Charles	KA	1592
TS	8995	T-1A	IL 25	Illinois St	St Charles	KA	1593
TS	9000	T-1A	IL 64 Main St	Tyler Rd	St Charles	KA	1594
TS	9010	T-1A	IL 64 Main St	IL 31 West 2nd Ave	St Charles	KA	1595
TS	9015	T-1A	IL 64 Main St	West 3rd St	St Charles	KA	1596
TS	9016	T-1A	IL 64 Main St	7th St	St Charles	KA	1597
TS	9017	T-1A	IL 64 Main St	15th St	St Charles	KA	1598
TS	9020	T-1A	IL 64 Main St	7th Ave	St Charles	KA	1599
TS	9023	T-1A	IL 64 North Ave	Kautz Rd Smith Rd	St Charles	KA	1600
TS	9024	T-1A	IL 64 Main St	Pheasant Run Ent	St Charles	KA	1601
TS	9047	T-1A	IL 38	Meijer Ent	St charles	KA	1602
TS	9065	T-1A	IL 64 Main St	1st Ave	St Charles	KA	1603
TS	9070	T-1A	IL 64 Main St	1st Street	St Charles	KA	1604
TS	9700	T-1A	IL 31	Knell Rd	Montgomery	KA	1605
TS	10945	T-1A	IL 38	Glen Gary Dr	Geneva	KA	1606
TS	10950	T-1A	IL 38	3rd St	Geneva	KA	1607
TS	10952	T-1A	IL 38	7th St	Geneva	KA	1608
TS	10955	T-1A	IL 38	Anderson Blvd	Geneva	KA	1609
TS	11481	T-1A	IL 31	Lovedale Ln	North aurora	KA	1610
TS	11482	T-1A	IL 31	Airport Rd	North Aurora	KA	1611
TS	11483	T-1A	IL 31	IL 56 State St	North Aurora	KA	1612
TS	11484	T-1A	IL 56	Hart Rd Mitchell Rd	North Aurora	KA	1613
TS	11485	T-1A	IL 56	Kirk Rd	Aurora	KA	1614
TS	11486	T-1A	IL 56 Butterfield Rd	Church St	Aurora	KA	1615
TS	11975	T-1A	IL 25	IL 56	North Aurora	KA	1616
TS	12094	T-1A	IL 31	McLean Blvd	St Charles Township	KA	1617
TS	13404	T-1A	IL 72	Tyrrell Rd	Gilberts	KA	1618
TS	14865	T-1A	IL 72	Locust Dr	West Dundee	KA	1619
TS	14867	T-1A	IL 72	Tartans Dr	West Dundee	KA	1620
TS	14875	T-1A	IL 72 Main St	5th St	West Dundee	KA	1621
TS	14880	T-1A	IL 31	Hillside St	West Dundee	KA	1622
TS	14885	T-1A	IL 31	Spruce Dr Aldi Entrance	West Dundee	KA	1623
TS	14890	T-1A	IL 31	Huntley Rd	Carpentersville	KA	1624
TS	14895	T-1A	Huntley Rd	Elm St	West Dundee	KA	1625
TS	14900	T-1A	IL 31	Willow Rd Strom Dr	West Dundee	KA	1626
TS	20373	T-1A	IL 31	Red Gate Rd	St Charles	KA	1627
TS	20390	T-1A	IL 38	St Charles Mall	St Charles	KA	1628
TS	20396	T-1A	IL 31	Kane St	West Dundee	KA	1629
TS	21630	T-1A	IL 31	Boncosky Rd	West Dundee	KA	1630
TS	21745	T-1A	IL 64 Main St	38th St Charlestown	St Charles	KA	1631

				Mall East Ent			
TS	21746	T-1A	IL 64 North Ave	Charlestown Center W Dr	St Charles	KA	1632
TS	21747	T-1A	IL 64 Main St	Foxfield Commons Lakeside Dr	St Charles	KA	1633
TS	21768	T-1A	IL 72	Sleepy Hollow Rd Carrington Dr	Sleepy Hollow	KA	1634
TS	21935	T-1A	IL 31	Prairie St	St Charles	KA	1635
TS	21972	T-1A	I 90 NW Tlwy	US 20	Hampshire Township	KA	1636
TS	21996	T-1A	IL 25	Country Club Rd	Wayne/St Charles	KA	1637
TS	21997	T-1A	IL 25	Red Gate Rd	St Charles	KA	1638
TS	22305	T-1A	IL 72	Village Quarter Rd	West Dundee	KA	1639
TS	695	T-1A	US 20	US 34 Ogden Ave	Montgomery	KE	1640
TS	696	T-1A	US 34 Ogden Ave	Hill Ave	Montgomery	KE	1641
TS	698	T-1A	US 34 Ogden Ave	Hafenrichter Rd Farnsworth Rd	Aurora	KE	1642
TS	715	T-1A	US 30	Briarcliff Rd	Oswego	KE	1643
TS	720	T-1A	US 30	Douglas Rd	Montgomery	KE	1644
TS	722	T-1A	US 30	5th St	Montgomery	KE	1645
TS	731	T-1A	US 30	Goodwin Dr	Montgomery	KE	1646
TS	732	T-1A	Hill Ave	Goodwin Dr	Oswego	KE	1647
TS	733	T-1A	US 30 US 34	Commercial Drive Menards	Montgomery	KE	1648
TS	837	T-1A	IL 31	Caterpillar Entrance	Aurora	KE	1649
TS	21390	T-1A	US 30	Wolf Crossing Rd	Oswego	KE	1650
TS	557	T-1A	IL 134	Wilson Rd	Fox Lake	LA	1651
TS	558	T-1A	US 12 IL 59	Hartigan Home Depot	Fox Lake	LA	1652
TS	559	T-1A	US 12 IL 59	IL 134	Fox Lake	LA	1653
TS	717	T-1A	IL 59	Monaville Rd W	Lake Villa	LA	1654
TS	925	T-1A	IL 176	I 94 Tri State Tlwy West Ramp	Lakemoor	LA	1655
TS	930	T-1A	IL 176	I 94 Tri State Tlwy E Ramp/Lamb	Libertyville	LA	1656
TS	935	T-1A	IL 137 Buckley Rd	I 94 West Ramp	Libertyville	LA	1657
TS	936	T-1A	IL 137 Buckley Rd	I 94 East Ramp	Libertyville	LA	1658
TS	940	T-1A	US 12	IL 22	Lake Villa	LA	1659
TS	941	T-1A	IL 22	Village Square	Lake Zurich	LA	1660
TS	945	T-1A	US 12	Grand Ave	Fox Lake	LA	1661
TS	950	T-1A	US 12	Old Rand Rd North	Lake Zurich	LA	1662
TS	955	T-1A	US 12	Quentin Rd	Ivanhoe	LA	1663
TS	957	T-1A	US 12	Quentin Rd Collection	Kildeer	LA	1664
TS	960	T-1A	US 12	Ronney Lake Shore Dr	Wauconda	LA	1665
TS	965	T-1A	US 12	Long Grove Rd	Lindenhurst	LA	1666
TS	966	T-1A	IL 53	Long Grove Rd	Kildeer	LA	1667
TS	967	T-1A	US 12	Old Rand Rd South	Lake Zurich	LA	1668

TS	969	T-1A	US 12	Deer Park Rd	Deer Park	LA	1669
TS	975	T-1A	US 12	Cuba Rd	Lake Zurich	LA	1670
TS	2367	T-1A	IL 43 Waukegan Rd	Oakmont Ave	Deerfield	LA	1671
TS	4685	T-1A	US 14 Northwest Hwy	Berry Rd	Barrington	LA	1672
TS	4690	T-1A	US 14 Northwest Hwy	Western Ave Chicago Aerial Industries	Barrington	LA	1673
TS	4700	T-1A	US 14 Northwest Hwy	Hart Rd	Barrington	LA	1674
TS	6510	T-1A	US 12 IL 59	IL 120	Lake Zurich	LA	1675
TS	6511	T-1A	US 12 IL 59	Old Belvedere Rd Volo Village	Volo	LA	1676
TS	6515	T-1A	US 12-IL 59 East Ramp	IL 176	Wauconda	LA	1677
TS	6516	T-1A	US 12-IL 59 West Ramp	IL 176	Wauconda	LA	1678
TS	6517	T-1A	IL 176	Wauconda Crossing	Wauconda	LA	1679
TS	6520	T-1A	US 12 IL 59	Bonner Rd	Wauconda	LA	1680
TS	6525	T-1A	US 14 Northwest Hwy	IL 59 Hough Rd	Barrington	LA	1681
TS	6530	T-1A	US 14 Northwest Hwy	Kelsey Rd	Barrington Hills	LA	1682
TS	6531	T-1A	IL 22	Kelsey Rd	North Barrington	LA	1683
TS	6532	T-1A	US 14 Northwest Hwy	Pepper Rd	North Barrington	LA	1684
TS	6535	T-1A	US 41	IL 21 Milwaukee Ave	Gurnee	LA	1685
TS	6540	T-1A	US 41	IL 22 Half Day Rd	Highland Park	LA	1686
TS	6543	T-1A	IL 22	US 41 North Ramp	Highland Park	LA	1687
TS	6545	T-1A	US 41 Skokie Hwy	IL 60 Kennedy Rd	Lake Forest	LA	1688
TS	6550	T-1A	US 41	IL 132 Grand Ave	Gurnee	LA	1689
TS	6551	T-1A	IL 132 Grand Ave	1st St	Gurnee	LA	1690
TS	6555	T-1A	US 41	IL 137	North Chicago	LA	1691
TS	6560	T-1A	US 41	IL 173	Rosecrans	LA	1692
TS	6565	T-1A	US 41	22nd St	North Chicago	LA	1693
TS	6567	T-1A	US 41	Amhurst Pkwy	Waukegan	LA	1694
TS	6568	T-1A	IL 173	I 94 Off Ramp	Rosencrans	LA	1695
TS	6569	T-1A	IL 173	I 94 On Ramp	Rosencrans	LA	1696
TS	6570	T-1A	US 41 Skokie Hwy	Delaney Rd	Gurnee	LA	1697
TS	6575	T-1A	US 41	Old Elm Rd	Lake Forest	LA	1698
TS	6580	T-1A	US 41	Wadsworth Rd	Wadsworth	LA	1699
TS	6585	T-1A	US 41	Westleigh Rd	Lake Forest	LA	1700
TS	6590	T-1A	US 41	West Park Ave	Highland Park	LA	1701
TS	6594	T-1A	US 45 IL 21 Milwaukee Ave	Old Half Day Rd	Libertyville	LA	1702
TS	6595	T-1A	US 45 IL 21 Milwaukee Ave	US 45 Old Half Day Rd	Lincolnshire	LA	1703
TS	6598	T-1A	US 45	Port Clinton Rd	Vernon Hills	LA	1704
TS	6600	T-1A	US 45 IL 21 Milwaukee Ave	IL 22	Lincolnshire	LA	1705
TS	6605	T-1A	US 45	IL 60	Mundelein	LA	1706
TS	6610	T-1A	US 45	IL 83	Long Grove	LA	1707

TS	6615	T-1A	US 45	IL 132 Grand Ave	Gurnee	LA	1708
TS	6617	T-1A	US 45	Sand Lake Rd	Lincolnshire	LA	1709
TS	6618	T-1A	US 45	Dada Dr Grant Ave	Gurnee	LA	1710
TS	6620	T-1A	US 45	IL 173	Antioch	LA	1711
TS	6625	T-1A	US 45	IL 176	Mundelein	LA	1712
TS	6630	T-1A	US 45 IL 21 Milwaukee Ave	Aptakisic Rd	Lincolnshire	LA	1713
TS	6635	T-1A	US 45	Brae Loch Rd	Gurnee	LA	1714
TS	6640	T-1A	US 45	Butterfield Rd	Vernon Hills/Mundelein	LA	1715
TS	6641	T-1A	US 45	Oakwood Rd	Vernon Hills	LA	1716
TS	6645	T-1A	US 45	Center Rd	Grayslake	LA	1717
TS	6650	T-1A	US 45 IL 21 Milwaukee Ave	Deerfield Rd	Riverwoods	LA	1718
TS	6655	T-1A	US 45	Deerpath Rd	Vernon Hills	LA	1719
TS	6657	T-1A	US 45	Commuter Lot Ranney Ave	Vernon Hills	LA	1720
TS	6658	T-1A	US 45	Buffalo Grove Rd Fairway Dr	Vernon Hills	LA	1721
TS	6660	T-1A	US 45 IL 21 Milwaukee Ave	Inverrary Rd	Buffalo Grove	LA	1722
TS	6665	T-1A	US 45 IL 21 Milwaukee Ave	Knightsbridge Pkwy	Lincolnshire	LA	1723
TS	6675	T-1A	US 45	Peterson Rd	Libertyville	LA	1724
TS	6680	T-1A	US 45 IL 21 Milwaukee Ave	Busch Parkway	Lincolnshire	LA	1725
TS	6685	T-1A	US 45	Washington St	Gurnee	LA	1726
TS	6695	T-1A	US 45 IL 21 Milwaukee Ave	Marriott Lincolnshire Ent	Lincolnshire	LA	1727
TS	6698	T-1A	US 45 IL 21 Milwaukee Ave	Audobon Way	Lincolnshire	LA	1728
TS	6700	T-1A	IL 21 Milwaukee Ave	IL 60	Vernon Hills	LA	1729
TS	6708	T-1A	IL 21 Milwaukee Ave	Casey Rd	Libertyville	LA	1730
TS	6710	T-1A	IL 21 Milwaukee Ave	IL 137	Libertyville	LA	1731
TS	6715	T-1A	IL 21 Milwaukee Ave	IL 176	Libertyville	LA	1732
TS	6718	T-1A	IL 21 Milwaukee Ave	North Hollister Dr	Vernon Hills	LA	1733
TS	6720	T-1A	IL 21 Milwaukee Ave	Hawthorn Center Drive 6	Vernon Hills	LA	1734
TS	6725	T-1A	IL 21 Milwaukee Ave	Hawthorn Center Drive 7	Vernon Hills	LA	1735
TS	6730	T-1A	IL 21 Milwaukee Ave	Washington St	Gurnee	LA	1736
TS	6732	T-1A	IL 21 Milwaukee Ave	Six Flags Riverside Dr Great America	Gurnee	LA	1737
TS	6735	T-1A	IL 22	IL 43	Bannockburn	LA	1738
TS	6740	T-1A	IL 22	IL 59	North Barrington	LA	1739
TS	6745	T-1A	IL 22	IL 83	Long Grove	LA	1740
TS	6750	T-1A	Main St	Midlothian Church In Lake Zurich	Lake Zurich	LA	1741

TS	6751	T-1A	IL 22	Buesching Rd	Lake Zurich	LA	1742
TS	6753	T-1A	Midlothian Rd	Oakwood Rd	Lake Zurich	LA	1743
TS	6755	T-1A	Main St	Old Rand Road	Lake Zurich	LA	1744
TS	6757	T-1A	IL 22	Old Rand Rd	Lake Zurich	LA	1745
TS	6758	T-1A	IL 22	East Main St	Lake Zurich	LA	1746
TS	6759	T-1A	IL 22	West Main St	Lake Zurich	LA	1747
TS	6760	T-1A	IL 22	Port Clinton Rd Old Half Day Rd	Lincolnshire	LA	1748
TS	6765	T-1A	IL 22	Quentin Rd	Kildeer	LA	1749
TS	6767	T-1A	IL 22	Kemper Insurance Ent	Lake Zurich	LA	1750
TS	6770	T-1A	IL 22	Riverwoods Rd Bradley Rd	Lincolnshire	LA	1751
TS	6775	T-1A	IL 22	Ela Rd	Lake Zurich	LA	1752
TS	6780	T-1A	IL 22	Barclay Blvd	Lincolnshire	LA	1753
TS	6785	T-1A	IL 22	Old Mill Grove Rd Oakwood Rd	Lake Zurich	LA	1754
TS	6790	T-1A	IL 22	Westminster Way Hewitt Dr	Lincolnshire	LA	1755
TS	6795	T-1A	IL 43 Waukegan Rd	IL 60	Lake Forest	LA	1756
TS	6800	T-1A	IL 43 Waukegan Rd	IL 137 Buckley Rd	North Chicago	LA	1757
TS	6806	T-1A	IL 43 Waukegan Rd	Westmoreland Dr Middle Fork	Lake Forest	LA	1758
TS	6810	T-1A	IL 43 Waukegan Rd	22nd St Martin L King Dr	North Chicago	LA	1759
TS	6815	T-1A	IL 43 Waukegan Rd	Abbott Labs Gate 1	North Chicago	LA	1760
TS	6820	T-1A	IL 43 Waukegan Rd	Abbott Labs Gate 2	North Chicago	LA	1761
TS	6830	T-1A	IL 43 Waukegan Rd	Foster Ave	Lake Bluff	LA	1762
TS	6835	T-1A	IL 53	IL 83	Long Grove	LA	1763
TS	6837	T-1A	IL 83	Robert Parker Coffin Rd	Long Grove	LA	1764
TS	6838	T-1A	IL 53	Menards Ent	Long Grove	LA	1765
TS	6839	T-1A	IL 53	Old McHenry Rd	Long Grove	LA	1766
TS	6840	T-1A	IL 59	IL 132	Lake Forest	LA	1767
TS	6843	T-1A	IL 173	Tiffany Rd	Antioch	LA	1768
TS	6845	T-1A	IL 59	IL 173	Antioch	LA	1769
TS	6847	T-1A	IL 173	Walmart Ent	Antioch	LA	1770
TS	6850	T-1A	IL 59	Grand Ave Washington St	Fox Lake	LA	1771
TS	6855	T-1A	IL 59	Grass Lake Rd	Antioch	LA	1772
TS	6857	T-1A	IL 59	Beach Grove Rd	Antioch	LA	1773
TS	6860	T-1A	IL 59	Miller Rd	Barrington	LA	1774
TS	6865	T-1A	IL 60	Butterfield Rd	Vernon Hills	LA	1775
TS	6870	T-1A	IL 60	Deerpath Rd	Vernon Hills	LA	1776
TS	6875	T-1A	IL 60	Lakeview Pkwy Hawthorn Ct	Vernon Hills	LA	1777
TS	6880	T-1A	IL 60	Hawthorn Center Drive 3	Vernon Hills	LA	1778

TS	6885	T-1A	IL 60	Hawthorn Center Drive 4	Vernon Hills	LA	1779
TS	6890	T-1A	IL 60	Hawthorn Center Drive 5	Vernon Hills	LA	1780
TS	6895	T-1A	IL 60	St Mary's Rd	Vernon Hills	LA	1781
TS	6900	T-1A	IL 60	Aspen Dr	Vernon Hills	LA	1782
TS	6905	T-1A	IL 60	Oak Creek Plaza	Mundelein	LA	1783
TS	6906	T-1A	IL 120 Belvedere Rd	Cedar Lake Rd	Lake Villa	LA	1784
TS	6908	T-1A	IL 60	Cedar Lake Rd	Round Lake	LA	1785
TS	6909	T-1A	IL 60	Peterson Rd	Round Lake Park	LA	1786
TS	6910	T-1A	IL 60 IL 83	Schanck Ave North Junction	Mundelein/Libertyville	LA	1787
TS	6911	T-1A	IL 60	Connector	Mundelein	LA	1788
TS	6912	T-1A	IL 60	Fairfield Rd	Freemont Twnsp	LA	1789
TS	6915	T-1A	IL 60 IL 83	IL 176	Mundelein	LA	1790
TS	6920	T-1A	IL 60 IL 83	Diamond Lake Rd	Island Lake	LA	1791
TS	6930	T-1A	IL 60 IL 83	Hawley St	Mundelein	LA	1792
TS	6935	T-1A	IL 60 IL 83	Willow Springs Rd South Junction	Mundelein	LA	1793
TS	6940	T-1A	IL 83	IL 120	Grayslake	LA	1794
TS	6955	T-1A	IL 83	Aptakisic Rd Long Grove Rd	Long Grove	LA	1795
TS	6957	T-1A	IL 83	Hilltop Rd	Long Grove	LA	1796
TS	6960	T-1A	IL 83	Arlington Heights Rd	Buffalo Grove	LA	1797
TS	6965	T-1A	IL 83	Deerfield Pkwy Checker Dr	Buffalo Grove	LA	1798
TS	6975	T-1A	IL 83	Buffalo Grove Rd	Buffalo Grove	LA	1799
TS	6985	T-1A	IL 83	Buffalo Grove SC Highpoint Rd	Buffalo Grove	LA	1800
TS	6990	T-1A	IL 83	Gilmer Rd Oakwood Dr	Long Grove	LA	1801
TS	6992	T-1A	IL 83	Westmoreland Dr	Long Grove	LA	1802
TS	6995	T-1A	IL 120 Belvedere Rd	IL 134	Gurnee	LA	1803
TS	7000	T-1A	IL 120 Belvedere Rd	Hainsville Rd	Hainesville	LA	1804
TS	7005	T-1A	IL 120 Belvedere Rd	Knight Ave	Park City	LA	1805
TS	7010	T-1A	IL 120 Belvedere Rd	Oplaine Rd	Waukegan / Gurnee	LA	1806
TS	7015	T-1A	IL 131 Green Bay Rd	IL 137 Buckley	North Chicago	LA	1807
TS	7018	T-1A	IL 131 Green Bay Rd	Cavin Rd	North Chicago	LA	1808
TS	7020	T-1A	IL 131 Green Bay Rd	IL 176 Rockland Rd Scranton Ave	Lake Bluff	LA	1809
TS	7035	T-1A	IL 131 Green Bay Rd	Washington St	Waukegan	LA	1810
TS	7040	T-1A	IL 131 Green Bay Rd	Yorkhouse Rd	Beach Park	LA	1811
TS	7045	T-1A	IL 131 Green Bay Rd	10th St	North Chicago	LA	1812
TS	7048	T-1A	IL 173	Hunt Club Rd	Old Mill Creek	LA	1813
TS	7049	T-1A	IL 131 Green Bay Rd	21st St	Zion	LA	1814
TS	7050	T-1A	IL 131 Green Bay Rd	IL 173	Wadsworth	LA	1815
TS	7054	T-1A	IL 131 Green Bay Rd	Russel Rd	Zion	LA	1816

TS	7055	T-1A	IL 132 Grand Ave	Great America Ent Lawson Blvd	Gurnee	LA	1817
TS	7060	T-1A	IL 132 Grand Ave	Hunt Club Rd	Gurnee	LA	1818
TS	7062	T-1A	IL 132 Grand Ave	Brookside Dr	Gurnee	LA	1819
TS	7070	T-1A	IL 132 Grand Ave	Sand Lake Rd	Lindenhurst	LA	1820
TS	7075	T-1A	IL 132 Grand Ave	Granada Blvd Lindenhurst Dr	Lindenhurst	LA	1821
TS	7080	T-1A	IL 132 Grand Ave	Deep Lake Rd	Lake Villa	LA	1822
TS	7081	T-1A	IL 132 Grand Ave	Munn Rd	Lindenhurst	LA	1823
TS	7085	T-1A	IL 132 Grand Ave	Dilleys Rd	Gurnee	LA	1824
TS	7090	T-1A	IL 134	Fairfield Rd	Round Lake	LA	1825
TS	7094	T-1A	IL 137	Butterfield Square	Libertyville	LA	1826
TS	7095	T-1A	IL 137	Butterfield Rd	Libertyville	LA	1827
TS	7100	T-1A	IL 137 Buckley Rd	Meridian Dr Georgia Rd	North Chicago	LA	1828
TS	7105	T-1A	IL 137 Buckley Rd	O'plaine Rd	Green Oaks	LA	1829
TS	7110	T-1A	IL 137 Buckley Rd	St Mary's Rd	Green Oaks	LA	1830
TS	7115	T-1A	IL 137 Buckley Rd	Great Lakes Dr	North Chicago	LA	1831
TS	7120	T-1A	IL 137 Buckley Rd	Mississippi St	North Chicago	LA	1832
TS	7125	T-1A	IL 137 Buckley Rd	Abbott No Entrance Gate 3	North Chicago	LA	1833
TS	7129	T-1A	IL 173	Savage Rd Deercrest Dr	Antioch	LA	1834
TS	7130	T-1A	IL 173	Deep Lake Rd	Antioch	LA	1835
TS	7132	T-1A	IL 173	Delany Rd	Wadsworth	LA	1836
TS	7135	T-1A	IL 176	Darrell Rd	Highland Park	LA	1837
TS	7137	T-1A	IL 176	Westridge Dr	Island Lake	LA	1838
TS	7139	T-1A	IL 176	Beech St Eastway Dr	Island Lake	LA	1839
TS	7140	T-1A	IL 176	Fairfield Rd	Wauconda	LA	1840
TS	7145	T-1A	IL 176	Midlothian Rd	Mundelein	LA	1841
TS	7150	T-1A	IL 176	Old Rand Rd Main St in Wauconda	Wauconda	LA	1842
TS	7152	T-1A	IL 176	Larkdale Dr	Lake Zurich	LA	1843
TS	7160	T-1A	IL 137 Buckley Rd	Lewis Ave	North Chicago	LA	1844
TS	7170	T-1A	IL 137 Buckley Rd	Illinois St	Grayslake	LA	1845
TS	7175	T-1A	IL 137 Buckley Rd	Ray St	North Chicago	LA	1846
TS	7190	T-1A	IL 137 Sheridan Rd	Beach Rd	Beach Park	LA	1847
TS	7200	T-1A	IL 137 Sheridan Rd	Yorkhouse Rd	Beach Park	LA	1848
TS	7820	T-1A	IL 131 Green Bay Rd	IL 120 Belvidere Rd	Waukegan	LA	1849
TS	9375	T-1A	IL 131 Green Bay Rd	14th St	North Chicago	LA	1850
TS	9380	T-1A	IL 131 Green Bay Rd	22nd St	North Chicago	LA	1851
TS	9390	T-1A	IL 131 Green Bay Rd	Saratoga St	North Chicago	LA	1852
TS	9407	T-1A	IL 137 Sheridan Rd	10th St	North Chicago	LA	1853
TS	9415	T-1A	IL 137 Sheridan Rd	14th St	North Chicago	LA	1854
TS	9420	T-1A	IL 137 Sheridan Rd	16th St	North Chicago	LA	1855

TS	9425	T-1A	IL 137 Sheridan Rd	18th St	North Chicago	LA	1856
TS	9885	T-1A	IL 83 McHenry Rd	Pauline Ave Town Place Pk	Buffalo Grove	LA	1857
TS	10661	T-1A	Sheridan Rd	Old Elm Rd	Lake Forest	LA	1858
TS	10665	T-1A	IL 43 Waukegan Rd	Deerpath Rd	Lake Forest	LA	1859
TS	10670	T-1A	IL 43 Waukegan Rd	Everett Rd	Lake Forest	LA	1860
TS	10675	T-1A	IL 43 Waukegan Rd	Westleigh Rd	Lake Forest	LA	1861
TS	10676	T-1A	IL 43 Waukegan Rd	Gloucester Crossing	Lake Forest	LA	1862
TS	10822	T-1A	Lake Cook Rd	Green Bay Rd	Highland Park	LA	1863
TS	11115	T-1A	IL 43 Waukegan Rd	Bannockburn Office Plaza	Bannockburn	LA	1864
TS	11595	T-1A	Sheridan Rd	Buckley Rd	North Chicago	LA	1865
TS	11596	T-1A	Sheridan Rd	24th St	North Chicago	LA	1866
TS	11597	T-1A	Sheridan Rd	Farragut Ave	North Chicago	LA	1867
TS	11598	T-1A	Sheridan Rd	D St	North Chicago	LA	1868
TS	11605	T-1A	IL 22	Elm Rd Oxford Dr	Lincolnshire	LA	1869
TS	11615	T-1A	IL 21 Milwaukee Ave	Hawthorn Hills SC Hawthorn Pkwy	Vernon Hills	LA	1870
TS	11700	T-1A	IL 60	Bradley Dr Riverwoods Dr	Lake Forest	LA	1871
TS	11701	T-1A	IL 60	W W Grainger Ent	Long Grove/Mundelein	LA	1872
TS	11705	T-1A	IL 60	I 94 Tri State E Ramp NB E	Mettawa	LA	1873
TS	11706	T-1A	IL 60	I 94 Tri State W Ramp SB W	Mettawa	LA	1874
TS	11707	T-1A	IL 60	Conway Farms	Lake Forest	LA	1875
TS	11708	T-1A	IL 60	Lake Forest Academy	Lake Forest	LA	1876
TS	11875	T-1A	US 41	Clavey Rd Old Skokie Rd	Highland Park	LA	1877
TS	11876	T-1A	Skokie Valley Rd	Clavey Rd	Highland Park	LA	1878
TS	11877	T-1A	US 41	Skokie Valley Rd	Highland Park	LA	1879
TS	11930	T-1A	IL 120 Belvedere Rd	Hunt Club Rd	Gurnee	LA	1880
TS	11935	T-1A	IL 22	Telegraph Rd	Bannockburn	LA	1881
TS	11940	T-1A	IL 59	Wilson Rd Ridge Rd	Fox Lake	LA	1882
TS	11945	T-1A	US 12	State Park Rd East St	Fox Lake	LA	1883
TS	12120	T-1A	IL 21 Milwaukee Ave	Rockland Rd	Libertyville	LA	1884
TS	12277	T-1A	IL 43 Waukegan Rd	Knollwood Rd North Shore Dr	Lake Bluff	LA	1885
TS	12285	T-1A	US 12	Northlake Commons K Mart	Lake Zurich	LA	1886
TS	12286	T-1A	US 12	Honey Lake Rd	Lake Zurick	LA	1887
TS	12290	T-1A	US 12	Eagle Point Rd Sayton Rd	Fox Lake	LA	1888
TS	12295	T-1A	US 12	Ela Rd	Lake Zurich	LA	1889
TS	12297	T-1A	US 12	June Terrace	Lake Zurich	LA	1890
TS	12305	T-1A	US 45	IL 120 Belvedere Rd	Grayslake	LA	1891

TS	12315	T-1A	IL 83	Washington St	Grayslake	LA	1892
TS	12330	T-1A	US 45	Winchester Rd	Libertyville	LA	1893
TS	12380	T-1A	IL 22	I 94 Tri State Tlwy E Ramp	Bannockburn	LA	1894
TS	12385	T-1A	IL 22	I 94 Tri State Tlwy W Ramp	Lincolnshire	LA	1895
TS	12390	T-1A	IL 22	Ridge Rd East	Hawthorn Woods	LA	1896
TS	12391	T-1A	IL 22	Tennyson Ln Ridge Rd West	Highland Park	LA	1897
TS	12915	T-1A	IL 43 Waukegan Rd	McDonalds Ent Cadwells Cr	Deerfield	LA	1898
TS	12920	T-1A	IL 43 Waukegan Rd	Kates Rd	Deerfield	LA	1899
TS	12925	T-1A	IL 43 Waukegan Rd	Longfellow Ave Osterman Ave	Deerfield	LA	1900
TS	12930	T-1A	IL 43 Waukegan Rd	Deerfield Bvld	Deerfield	LA	1901
TS	12935	T-1A	IL 43 Waukegan Rd	Deerfield Rd	Deerfield	LA	1902
TS	12937	T-1A	IL 43 Waukegan Rd	Deerfield Fire Station	Deerfield	LA	1903
TS	12940	T-1A	IL 43 Waukegan Rd	Hazel Ave Elder Ln	Deerfield	LA	1904
TS	12945	T-1A	IL 43 Waukegan Rd	Greenwood Ave	Deerfield	LA	1905
TS	12950	T-1A	IL 43 Waukegan Rd	Deerfield High School	Deerfield	LA	1906
TS	12952	T-1A	IL 43 Waukegan Rd	North Ave	Deerfield	LA	1907
TS	13739	T-1A	IL 83	Library Ln	Grayslake	LA	1908
TS	13740	T-1A	IL 83	Center Ave	Grayslake	LA	1909
TS	13741	T-1A	IL 83	Frederick St	Grayslake	LA	1910
TS	13746	T-1A	IL 120 Belvedere Rd	Allegheny Rd	Grayslake	LA	1911
TS	13985	T-1A	IL 21 Milwaukee Ave	Winchester Rd	Libertyville	LA	1912
TS	13990	T-1A	IL 21 Milwaukee Ave	Cook St	Libertyville	LA	1913
TS	13995	T-1A	IL 21 Milwaukee Ave	Church St	Libertyville	LA	1914
TS	14005	T-1A	IL 21 Milwaukee Ave	Valley Park Dr	Libertyville	LA	1915
TS	14007	T-1A	IL 21 Milwaukee Ave	Condell Dr	Libertyville	LA	1916
TS	14013	T-1A	IL 21 Milwaukee Ave	South Artaius Pkwy	Libertyville	LA	1917
TS	14015	T-1A	IL 21 Milwaukee Ave	Red Top Dr Greentree Blvd	Libertyville	LA	1918
TS	14016	T-1A	IL 21 Milwaukee Ave	Adler Dr	Libertyville	LA	1919
TS	14017	T-1A	IL 21 Milwaukee Ave	Golf Rd	Libertyville	LA	1920
TS	14018	T-1A	IL 21 Milwaukee Ave	Greggs Pkwy North Artaius Pkwy	Libertyville	LA	1921
TS	14020	T-1A	IL 176	Butterfield Rd	Libertyville	LA	1922
TS	14025	T-1A	IL 176	Garfield Ave Brainard Ave	Libertyville	LA	1923
TS	14030	T-1A	IL 176	Dawes St	Libertyville	LA	1924
TS	14035	T-1A	IL 176	4th Ave	Libertyville	LA	1925
TS	14340	T-1A	US 45	Diamond Lake Rd	Mundelein	LA	1926
TS	14345	T-1A	US 45	Division St	Mundelein	LA	1927
TS	14350	T-1A	US 45	Hawley St	Mundelein	LA	1928
TS	14370	T-1A	US 45	Allanson Rd	Mundelein	LA	1929

TS	14372	T-1A	US 45	Courtland St	Mundelein	LA	1930
TS	14904	T-1A	IL 43 Waukegan Rd	Pulaski Dr	Waukegan	LA	1931
TS	14905	T-1A	IL 43 Waukegan Rd	Lakehurst Rd	Waukegan	LA	1932
TS	14910	T-1A	IL 43 Waukegan Rd	Fountain Square Pl	Waukegan	LA	1933
TS	14915	T-1A	IL 43 Waukegan Rd	Northpoint Blvd	Waukegan	LA	1934
TS	14917	T-1A	IL 43 Waukegan Rd	Lakeside Dr Baxter Ent	Waukegan	LA	1935
TS	14925	T-1A	IL 120 Belvedere Rd	Greenleaf St North Ramp	Waukegan	LA	1936
TS	14930	T-1A	IL 120 Belvedere Rd	Greenleaf St South Ramp	Waukegan	LA	1937
TS	14940	T-1A	IL 120 Belvedere Rd	Lewis Ave	Waukegan	LA	1938
TS	14945	T-1A	IL 120 Belvedere Rd	Glen Rock Ave	Waukegan	LA	1939
TS	14950	T-1A	IL 120 Belvedere Rd	Jackson Ave	Waukegan	LA	1940
TS	14955	T-1A	IL 120 Belvedere Rd	McAlister Ave	Waukegan	LA	1941
TS	14960	T-1A	IL 120 Belvedere Rd	County St	Waukegan	LA	1942
TS	14965	T-1A	IL 120 Belvedere Rd	Genesee St	Waukegan	LA	1943
TS	14970	T-1A	IL 120 Belvedere Rd	Keller Ave	Waukegan	LA	1944
TS	14972	T-1A	IL 120 Belvedere Rd	Pioneer Ct Lake Plaza	Waukegan	LA	1945
TS	14974	T-1A	IL 120 Belvedere Rd	Belvedere Mall East Entrance	Waukegan	LA	1946
TS	14980	T-1A	Grand Ave	Baldwin Ave	Waukegan	LA	1947
TS	14985	T-1A	Grand Ave	McAree Ave	Waukegan	LA	1948
TS	14990	T-1A	Grand Ave	Genesee St	Waukegan	LA	1949
TS	14995	T-1A	Grand Ave	County St	Waukegan	LA	1950
TS	15000	T-1A	Grand Ave	West St	Waukegan	LA	1951
TS	15005	T-1A	Grand Ave	Jackson Ave	Waukegan	LA	1952
TS	15010	T-1A	Grand Ave	Butrick St	Waukegan	LA	1953
TS	15015	T-1A	Grand Ave	Lewis Ave	Waukegan	LA	1954
TS	15020	T-1A	IL 131 Green Bay Rd	IL 132 Grand Ave	Waukegan	LA	1955
TS	15022	T-1A	IL 131 Green Bay Rd	Brookside Ave	Waukegan	LA	1956
TS	15025	T-1A	IL 131 Green Bay Rd	Sunset Ave	Waukegan	LA	1957
TS	15030	T-1A	IL 137 Sheridan Rd	South St	Waukegan	LA	1958
TS	15035	T-1A	Sheridan Rd	Belvidere Rd	Waukegan	LA	1959
TS	15065	T-1A	IL 137 Sheridan Rd	Miraflores Ave	Waukegan	LA	1960
TS	15131	T-1A	IL 137 Sheridan Rd	Genesee St	Waukegan	LA	1961
TS	20350	T-1A	IL 22	Lakeside Dr	Bannockburn	LA	1962
TS	20375	T-1A	IL 176	Bradley Dr	Libertyville	LA	1963
TS	20425	T-1A	IL 22	Buffalo Grove Rd	Buffalo Grove	LA	1964
TS	20426	T-1A	IL 22	Buffalo Grove Fire House	Buffalo Grove	LA	1965
TS	20485	T-1A	IL 131 Green Bay Rd	Crescent Ave	Waukegan	LA	1966
TS	20530	T-1A	IL 60	Saunders Rd Field Dr	Lake Forest	LA	1967
TS	20535	T-1A	US 12	Pheasant Ridge Dr	Lake Zurich	LA	1968
TS	20595	T-1A	US 12	Old McHenry Rd	Hainesville	LA	1969

TS	20995	T-1A	US 45 IL 21 Milwaukee Ave	Riverwalk Dr Columbus Pkwy	Buffalo Grove	LA	1970
TS	21000	T-1A	IL 132 Grand Ave	Gurnee Mills Circle West Menards Ent	Gurnee	LA	1971
TS	21010	T-1A	IL 137 Amstutz Expy	IL 137 Buckley Rd	North Chicago	LA	1972
TS	21070	T-1A	US 45	Evergreen Dr	Vernon Hills	LA	1973
TS	21085	T-1A	IL 137 Sheridan Rd	22nd St	North Chicago	LA	1974
TS	21110	T-1A	IL 132 Grand Ave	Gurnee Mills Circle East Tri State Pkwy	Gurnee	LA	1975
TS	21115	T-1A	IL 132 Grand Ave	Grand Hunt SC Sam's Club	Gurnee	LA	1976
TS	21117	T-1A	IL 132 Grand Ave	Almond Rd Hutchins Rd	Gurnee	LA	1977
TS	21118	T-1A	IL 132 Grand Ave	Rollins Rd Oakwood Dr	Gurnee	LA	1978
TS	21119	T-1A	IL 132 Grand Ave	Stonebrook Dr	Gurnee	LA	1979
TS	21120	T-1A	US 41	Stearns School Rd	Gurnee	LA	1980
TS	21181	T-1A	IL 22	Main St Prarie Rd W Junction	Prairie View	LA	1981
TS	21190	T-1A	IL 59	Kelsey Rd	Tower Lakes	LA	1982
TS	21195	T-1A	IL 132 Grand Ave	Belle Plaine St	Gurnee	LA	1983
TS	21215	T-1A	IL 22	Arboretum Way	Buffalo Grove	LA	1984
TS	21260	T-1A	US 45	Motorola Pkwy	Mundelein	LA	1985
TS	21295	T-1A	US 12	Miller Rd	Lake Zurich	LA	1986
TS	21350	T-1A	IL 59	Cuba Rd	Cuba	LA	1987
TS	21405	T-1A	US 45 IL 21 Milwaukee Ave	Tower Pkwy	Lincolnshire	LA	1988
TS	21409	T-1A	IL 21 Milwaukee Ave	American Hotel Dr	Vernon Hills	LA	1989
TS	21410	T-1A	IL 21 Milwaukee Ave	Corporate Woods Pkwy	Vernon Hills	LA	1990
TS	21411	T-1A	IL 21 Milwaukee Ave	Woodland Dr	Lincolnshire	LA	1991
TS	21412	T-1A	IL 21 Milwaukee Ave	Jamestown Rd Port Clinton Rd	Vernon Hills	LA	1992
TS	21420	T-1A	US 45	Dunbar Rd	Mundelein	LA	1993
TS	21490	T-1A	IL 21 Milwaukee Ave	Lake St	Libertyville	LA	1994
TS	21525	T-1A	IL 22	Old McHenry Rd	Long Grove	LA	1995
TS	21543	T-1A	IL 21 Milwaukee Ave	IL 120 North Ramp	Grayslake	LA	1996
TS	21544	T-1A	IL 21 Milwaukee Ave	IL 120 South Ramp	Grayslake	LA	1997
TS	21545	T-1A	IL 21 Milwaukee Ave	Gages Lake Rd	Gurnee	LA	1998
TS	21547	T-1A	IL 21 Milwaukee Ave	I 94 Exit Ramp	Gurnee	LA	1999
TS	21625	T-1A	IL 134	Hart Rd	Round Lake	LA	2000
TS	21655	T-1A	US 45	Gages Lake Rd	Gurnee	LA	2001
TS	21660	T-1A	US 45	IL 137	Mundelein	LA	2002
TS	21662	T-1A	IL 137	Casey Rd Midlothian Rd	Libertyville	LA	2003
TS	21663	T-1A	US 45	Casey Rd	Grayslake	LA	2004
TS	21695	T-1A	IL 43 Waukegan Rd	Baxter Ent Norman Rd	North Chicago	LA	2005
TS	21715	T-1A	IL 43 Waukegan Rd	Abbott Labs Gate 4	North Chicago	LA	2006

TS	21717	T-1A	IL 43 Waukegan Rd	Atkinson Ave	North Chicago	LA	2007
TS	21755	T-1A	US 45	Grass Lake Rd	Lake Bluff	LA	2008
TS	21756	T-1A	US 45	Millburn Rd	Lindenhurst	LA	2009
TS	21785	T-1A	US 12	Plum Grove Rd	Kildeer	LA	2010
TS	21885	T-1A	US 45	Arbor Vista Ln	Grayslake	LA	2011
TS	21940	T-1A	IL 120 Belvedere Rd	Gilmer Rd	Volo	LA	2012
TS	21942	T-1A	IL 120 Belvedere Rd	Fish Lake Rd	Volo	LA	2013
TS	21965	T-1A	IL 22	Stevenson HS Ent Palazzo Dr	Lincolnshire	LA	2014
TS	21969	T-1A	IL 120 Belvedere Rd	Mill Rd	Grayslake	LA	2015
TS	21975	T-1A	US 45	Townline Square SC	Mundelein	LA	2016
TS	21990	T-1A	IL 83	Lake St	Grayslake	LA	2017
TS	21993	T-1A	IL 83	Shorewood Dr	Round Lake Beach	LA	2018
TS	22010	T-1A	IL 120 Belvedere Rd	IL 60	Volo	LA	2019
TS	22015	T-1A	IL 60	Fish Lake Rd	Volo	LA	2020
TS	22040	T-1A	IL 59	Roberts Rd	Tower Lakes	LA	2021
TS	22041	T-1A	IL 59	Indian Trail	Tower Lakes	LA	2022
TS	22050	T-1A	IL 21 Milwaukee Ave	Market Pl	Vernon Hills	LA	2023
TS	22102	T-1A	IL 120 Belvedere Rd	Darrell Rd	Lakemoor	LA	2024
TS	22130	T-1A	IL 59	Devlin Rd	Fox Lake	LA	2025
TS	22250	T-1A	IL 120 Belvedere Rd	Fairfield Rd	Avon	LA	2026
TS	22255	T-1A	IL 120 Belvedere Rd	Wilson Rd	Grant Township	LA	2027
TS	1236	T-1A	US 14	Algonquin Rd	Fox River Grove	MC	2028
TS	1237	T-1A	US 14	Lincoln Ave	Fox River Grove	MC	2029
TS	1238	T-1A	US 14	Foxmoor Rd	Fox River Grove	MC	2030
TS	5812	T-1A	US 14	Wal Mart Entrance	Harvard	MC	2031
TS	7210	T-1A	US 12	IL 31	Richmond	MC	2032
TS	7215	T-1A	US 12	IL 173	Richmond	MC	2033
TS	7220	T-1A	US 12	Fox Lake Rd	Fox Lake	MC	2034
TS	7223	T-1A	US 12	Wilmot Rd	Spring Grove	MC	2035
TS	7225	T-1A	US 12	Winn Rd Spring Grove Rd	Spring Grove	MC	2036
TS	7230	T-1A	US 14	IL 22	Cary	MC	2037
TS	7235	T-1A	US 14	IL 47	Woodstock	MC	2038
TS	7238	T-1A	US 14	Dean St	Woodstock	MC	2039
TS	7240	T-1A	US 14	IL 173 W S Jct Brink St	Harvard	MC	2040
TS	7245	T-1A	US 14	Cary Rd West Main St	Cary	MC	2041
TS	7246	T-1A	US 14	Cary East Main St	Cary	MC	2042
TS	7248	T-1A	US 14	Cary Square SC	Cary	MC	2043
TS	7260	T-1A	US 14	Three Oaks Rd	Cary	MC	2044
TS	7270	T-1A	US 14	IL 173 E N Jct Diggins St Ayer St	Harvard	MC	2045
TS	7275	T-1A	US 14	First St	Cary	MC	2046
TS	7280	T-1A	IL 31	IL 62	Algonquin	MC	2047

TS	7281	T-1A	IL 62 Algonquin Rd	IL 31 NB Ramps A & B	Algonquin	MC	2048
TS	7282	T-1A	IL 62 Algonquin Rd	IL 31 SB Ramps C & D	Algonquin	MC	2049
TS	7285	T-1A	IL 31 Front St	IL 120 West Junction	McHenry	MC	2050
TS	7288	T-1A	IL 31	Prime Prky Albany St	McHenry	MC	2051
TS	7295	T-1A	IL 31	IL 176 Terra Cotta Ave	Crystal Lake	MC	2052
TS	7296	T-1A	IL 176	Valley View Dr	Prairie Grove	MC	2053
TS	7299	T-1A	IL 176	Smith Rd	Prairie Grove	MC	2054
TS	7305	T-1A	IL 31	Crystal Lake Rd	Crystal Lake	MC	2055
TS	7310	T-1A	IL 31	Johnsburg Rd	Johnsburg	MC	2056
TS	7311	T-1A	IL 31	Running Brook Farm	Hometowne	MC	2057
TS	7315	T-1A	IL 31	Three Oaks Rd	Crystal Lake	MC	2058
TS	7320	T-1A	IL 47	Algonquin Rd Huntley Rd	Huntley	MC	2059
TS	7322	T-1A	IL 47	Reed Rd	Huntley	MC	2060
TS	7323	T-1A	IL 47	McConnell Rd	Woodstock	MC	2061
TS	7325	T-1A	IL 47	Lake Ave Woodstock Dr	Woodstock	MC	2062
TS	7329	T-1A	IL 47	Kreutzer Rd	Huntley	MC	2063
TS	7330	T-1A	IL 47	Main St in Huntley	Huntley	MC	2064
TS	7335	T-1A	IL 120	Chapel Hill Rd	McHenry	MC	2065
TS	7340	T-1A	IL 120	River Rd	McHenry	MC	2066
TS	7342	T-1A	IL 120	Thompson Rd	Wonder Lake	MC	2067
TS	7345	T-1A	IL 120	Wonder Lake Rd	Wonder Lake	MC	2068
TS	7740	T-1A	IL 176	River Rd	Island Lake	MC	2069
TS	7741	T-1A	IL 176	Newport Ct	Island Lake	MC	2070
TS	7795	T-1A	IL 62 Algonquin Rd	Eastgate Dr	Algonquin	MC	2071
TS	7797	T-1A	IL 31	Huntington Dr	Algonquin	MC	2072
TS	7996	T-1A	IL 31	Edgewood Dr	Algonquin	MC	2073
TS	7998	T-1A	IL 31 Algonquin Bypass	Main St Quarry Access	Algonquin	MC	2074
TS	11580	T-1A	IL 62 Algonquin Rd	Harrison St	Algonquin	MC	2075
TS	11880	T-1A	IL 176	Roberts Rd	Island Lake	MC	2076
TS	11890	T-1A	IL 31	Lillian St	McHenry	MC	2077
TS	11895	T-1A	IL 31	McCullom Lake Rd	McHenry	MC	2078
TS	11896	T-1A	IL 31	Diamond Dr	McHenry	MC	2079
TS	11897	T-1A	IL 31	Blake Rd	McHenry	MC	2080
TS	11900	T-1A	IL 120	Ringwood Rd Currant Rd	McHenry	MC	2081
TS	11905	T-1A	IL 120	Meadow Rd	McHenry	MC	2082
TS	11910	T-1A	IL 120	Industrial Dr Oak Ave	McHenry	MC	2083
TS	11915	T-1A	IL 120	Crystal Lake Ave	McHenry	MC	2084
TS	11925	T-1A	IL 120	Riverside Dr	McHenry	MC	2085
TS	12170	T-1A	IL 62 Algonquin Rd	Algonquin Town Center	Algonquin	MC	2086
TS	15080	T-1A	IL 47	Russel Ct	Woodstock	MC	2087
TS	15086	T-1A	IL 120	Fleming Rd	Woodstock	MC	2088

TS	15087	T-1A	IL 47	Irving Ave	Woodstock	MC	2089
TS	15088	T-1A	IL 47	IL 120	Woodstock	MC	2090
TS	15089	T-1A	IL 120	Raffel Rd	Woodstock	MC	2091
TS	21240	T-1A	IL 47	IL 176 South	Lakewood	MC	2092
TS	21241	T-1A	IL 47	IL 176 North	Lakewood	MC	2093
TS	21460	T-1A	US 14 Division St	Airport Rd McGuire Rd	Harvard	MC	2094
TS	21463	T-1A	US 14	IL 23	Harvard	MC	2095
TS	21470	T-1A	US 14	Kishwaukee Valley Rd	Woodstock	MC	2096
TS	21640	T-1A	IL 62 Algonquin Rd	Sandbloom Rd Countryside Dr	Algonquin	MC	2097
TS	21815	T-1A	US 14	Jandus Rd Lake Julian Ln	Cary	MC	2098
TS	21968	T-1A	US 20	Prospect St	Marengo	MC	2099
TS	21970	T-1A	US 20	IL 23	Marengo	MC	2100
TS	21971	T-1A	IL 23	IL 176	Marengo	MC	2101
TS	22100	T-1A	IL 120	Lily Lake Rd	Lakemoor	MC	2102
TS	22157	T-1A	IL 31	Klasen Rd	Algonquin	MC	2103
TS	22220	T-1A	US 14	Cary Algonquin Rd	Cary	MC	2104
TS	22242	T-1A	County Line Rd	Haegers Bend Rd	Algonquin	MC	2105
TS	22245	T-1A	IL 62 Chicago St	County Line Rd	Algonquin	MC	2106
TS	157	T-1A	183rd St	Wolf Rd	Orland Park	WI	2107
TS	452	T-1A	US 30 Lincoln Hwy	Gougar Rd	New lenox	WI	2108
TS	924	T-1A	IL 1	Crete Monee Rd	Crete	WI	2109
TS	1084	T-1A	IL 113 Main St	IL 129 Washington St and IL 53 Front St	Braidwood	WI	2110
TS	4290	T-1A	US 30 Plainfield Rd	Larkin Ave	Crest Hill	WI	2111
TS	4295	T-1A	IL 7 Larkin Ave	Theodore Ave	Crest Hill	WI	2112
TS	4730	T-1A	Larkin Ave	Hillcrest SC	Crest Hill	WI	2113
TS	6385	T-1A	IL 59	Caton Farm Rd	Joliet	WI	2114
TS	7350	T-1A	Weber Rd	Normantown Rd	Romeoville	WI	2115
TS	7352	T-1A	I 55	Weber Rd South Ramp	Romeoville	WI	2116
TS	7354	T-1A	I 55	Weber Rd North Ramp	Romeoville	WI	2117
TS	7385	T-1A	I 80	Richards St North Ramp	Joliet	WI	2118
TS	7386	T-1A	US 52	Manhattan Rd Foxford Dr	Manhattan	WI	2119
TS	7387	T-1A	US 52	Laraway Rd	Joliet	WI	2120
TS	7390	T-1A	I 80	Richards St South Ramp	Joliet	WI	2121
TS	7395	T-1A	I 80	US 30 East Ramp	New lenox	WI	2122
TS	7400	T-1A	I 80	US 30 Lincoln Hwy	New lenox	WI	2123
TS	7405	T-1A	US 6 Channahon Rd	IL 7 Larkin Ave	Rockdale/Joliet	WI	2124
TS	7410	T-1A	US 6 Maple St	Walnut Ct Draper Ave	Joliet	WI	2125
TS	7411	T-1A	US 45 LaGrange Rd 96th Ave	Lincoln Way Ln Alsip Nursery	Frankfort	WI	2126

TS	7412	T-1A	US 45 LaGrange Rd	Laraway Rd	Frankfort	WI	2127
TS	7413	T-1A	US 45 LaGrange Rd 96th Ave	Nebraska Ave	Frankfort	WI	2128
TS	7414	T-1A	US 45 LaGrange Rd 96th Ave	Old Frankfort Way	Frankfort	WI	2129
TS	7415	T-1A	US 30 North St Lincoln Hwy	US 45 96th Ave	Frankfort	WI	2130
TS	7416	T-1A	US 30	Elsner Rd	Frankfort	WI	2131
TS	7418	T-1A	US 30	Pfieffer Dr	Frankfort	WI	2132
TS	7420	T-1A	US 30	IL 7 Theodore Rd	Crest Hill	WI	2133
TS	7425	T-1A	US 30	IL 59 Commercial Dr	Plainfield	WI	2134
TS	7426	T-1A	IL 59	Fort Beggs St	Plainfield	WI	2135
TS	7430	T-1A	US 30 Plainfield Rd	Canton Farm Rd Gaylord Rd	Crest Hill	WI	2136
TS	7431	T-1A	US 6 Southwest Hwy	I 355 West Ramps	New lenox	WI	2137
TS	7432	T-1A	US 6 Southwest Hwy	I 355 East Ramps	New lenox	WI	2138
TS	7433	T-1A	US 6 Southwest Hwy	Cedar Rd	New lenox	WI	2139
TS	7434	T-1A	US 6	Silver Cross Blvd Hospital Ent	New Lenox	WI	2140
TS	7435	T-1A	US 30 Lincoln Hwy Maple St	Cedar Rd	New lenox	WI	2141
TS	7437	T-1A	US 30 Lincoln Hwy	Prairie Dr	New lenox	WI	2142
TS	7439	T-1A	US 30	Williams St	New lenox	WI	2143
TS	7440	T-1A	US 30 Lincoln Hwy	Nelson Rd	New lenox	WI	2144
TS	7442	T-1A	US 30	Marley Rd	New lenox	WI	2145
TS	7445	T-1A	US 30 Lincoln Hwy Cass St	Walnut Rd	Joliet	WI	2146
TS	7450	T-1A	US 30 Lincoln Hwy Cass St	Washington St	Joliet/New Lenox	WI	2147
TS	7455	T-1A	US 30 Lincoln Hwy Maple St	Vine St East South Junction	New lenox	WI	2148
TS	7460	T-1A	US 30 Lincoln Hwy Cass St	Briggs St	Joliet	WI	2149
TS	7465	T-1A	US 30 Lincoln Hwy Maple St	Vine St West North Junction	New lenox	WI	2150
TS	7470	T-1A	US 30 Plainfield Rd	Renwick Rd Brown St	Plainfield	WI	2151
TS	7471	T-1A	IL 59	St Marys Rd	Plainfield	WI	2152
TS	7472	T-1A	US 30	Lily Cache Rd	Plainfield	WI	2153
TS	7473	T-1A	IL 59	Fraser Rd	Plainfield	WI	2154
TS	7474	T-1A	IL 59 Division St @ Renwick Rd	Renwick Rd	Plainfield	WI	2155
TS	7475	T-1A	US 30 Lincoln Hwy	Wolf Rd	Mokena	WI	2156
TS	7476	T-1A	US 30 Lincoln Hwy	Locust St	Frankfort	WI	2157
TS	7478	T-1A	US 30 Lincoln Hwy	Ridgemore Rd	Mokena	WI	2158
TS	7479	T-1A	US 30 Lincoln Hwy	Joliet Hwy	Mokena	WI	2159
TS	7480	T-1A	US 45 Mannheim Rd	191st St	Mokena	WI	2160
TS	7482	T-1A	I 80 South Ramp	US 45 96th Ave	Mokena	WI	2161

TS	7483	T-1A	I 80 Ramp B	US 45 96th Ave	Tinley park	WI	2162
TS	7485	T-1A	US 45 Mannheim Rd	195th St Willow Ln	Mokena	WI	2163
TS	7490	T-1A	US 52 Doris Ave	IL 53 Chicago St	Joliet	WI	2164
TS	7492	T-1A	IL 59	School St	Shorewood	WI	2165
TS	7493	T-1A	IL 59	Seil Rd	Shorewood	WI	2166
TS	7495	T-1A	US 52 Jefferson St	IL 59 Brook Forest Cottage	Shorewood	WI	2167
TS	7496	T-1A	US 52	Brookshore Dr	Shorewood	WI	2168
TS	7497	T-1A	US 52 Jeferson St	River Rd	Shorewood	WI	2169
TS	7500	T-1A	IL 1 Main St	Exchange St	Crete	WI	2170
TS	7503	T-1A	IL 1 Dixie Hwy	Church Rd	Beecher	WI	2171
TS	7504	T-1A	IL 1 Dixie Hwy	Chestnut Ln	Beecher	WI	2172
TS	7505	T-1A	IL 1 Dixie Hwy	Indiana Ave 303rd St	Beecher	WI	2173
TS	7510	T-1A	IL 7 IL 53 Broadway St	IL 7 Renwick Rd	Romeoville	WI	2174
TS	7511	T-1A	IL 7	Gougar Rd	Lockport	WI	2175
TS	7515	T-1A	IL 7 IL 53 Broadway St	IL 7 Theodore St	Crest Hill/Joliet	WI	2176
TS	7520	T-1A	IL 7 159th St	Bell Rd North	Homer Glen	WI	2177
TS	7525	T-1A	IL 7 159th St	Cedar Rd	Lockport	WI	2178
TS	7529	T-1A	IL 7 159th St	Adelman Rd	Lockport	WI	2179
TS	7530	T-1A	IL 7 Larkin Ave	Moen Ave	Rockdale	WI	2180
TS	7532	T-1A	IL 7 Larkin Ave	Meadow Ave	Rockdale	WI	2181
TS	7535	T-1A	IL 7 Theodore St	Arbor Ln Crest Dr	Crest Hill	WI	2182
TS	7540	T-1A	IL 7 Larkin Ave	North Ridge Plaza Drive	Joliet	WI	2183
TS	7545	T-1A	IL 7 IL 53 Broadway St	Division St 16th St Stateville Rd	Lockport	WI	2184
TS	7550	T-1A	IL 50 Cicero Ave	Governors Hwy	University Park	WI	2185
TS	7552	T-1A	IL 50 Walnut St	Court St	Monee	WI	2186
TS	7553	T-1A	I 57	Manhattan Monee Rd East Ramp	Monee	WI	2187
TS	7554	T-1A	I 57	Manhattan Monee Rd West Ramp	Monee	WI	2188
TS	7555	T-1A	IL 53 Baltimore St	IL 102 Water St	Wilmington	WI	2189
TS	7560	T-1A	IL 53	Airport Rd	Romeoville	WI	2190
TS	7563	T-1A	IL 53	Material Rd	Romeoville	WI	2191
TS	7565	T-1A	IL 53	Joliet Rd	Romeoville	WI	2192
TS	7567	T-1A	Joliet Rd	Bluff Rd	Romeoville	WI	2193
TS	7570	T-1A	IL 53 Chicago St	Laraway Rd	Joliet	WI	2194
TS	7575	T-1A	IL 53	Normantown Rd Devonwood Dr	Romeoville	WI	2195
TS	7577	T-1A	IL 59	Vermette Cir	Joliet	WI	2196
TS	7578	T-1A	IL 59	Wall Mart Ent	Shorewood	WI	2197
TS	7580	T-1A	IL 53	Kankakee River Wilmington Peotone Rd	Wilmington	WI	2198
TS	7581	T-1A	IL 53	North River Rd	Wilmington	WI	2199

TS	7582	T-1A	IL 53	South Arsenal Rd	Wilmington	WI	2200
TS	7585	T-1A	US 30 IL 59 Division St	IL 126 Main St	Plainfield	WI	2201
TS	7586	T-1A	US 30 IL 59 Division St	Naperville Rd	Plainfield	WI	2202
TS	7587	T-1A	IL 59	Meijer Entrance	Plainfield	WI	2203
TS	7588	T-1A	US 30 IL 59 Division St	US 30 143rd St	Plainfield	WI	2204
TS	7590	T-1A	IL 59	Black Rd	Shorewood	WI	2205
TS	7592	T-1A	IL 59	Industrial Dr	Plainfield	WI	2206
TS	7593	T-1A	IL 59	Vertin Blvd Target Ent	Shorewood	WI	2207
TS	7595	T-1A	IL 59	Theodore St	Joliet	WI	2208
TS	7600	T-1A	IL 102 Water St	East Kahler Rd West Kahler Rd	Wilmington	WI	2209
TS	7603	T-1A	IL 171 Archer Ave	151st St	Lockport	WI	2210
TS	7605	T-1A	IL 171 Archer Ave	143rd St	Homer	WI	2211
TS	7607	T-1A	IL 171 Archer Ave	Smith Rd	Lockport	WI	2212
TS	7608	T-1A	IL 171 Archer Ave	I 355 SB Ramp A	Lockport	WI	2213
TS	7609	T-1A	IL 171 Archer Ave	I 355 NB Ramp D	Lockport	WI	2214
TS	7610	T-1A	IL 171 Collins St	Woodruff St	Joliet	WI	2215
TS	7615	T-1A	IL 394	Exchange St	Crete	WI	2216
TS	7616	T-1A	IL 394 IL 1	Goodenow Rd	Crete	WI	2217
TS	7619	T-1A	IL 394	IL 1 Village Woods Dr	Crete Township	WI	2218
TS	7859	T-1A	IL 53	Honeytree Dr	Romeoville	WI	2219
TS	7866	T-1A	IL 53	Enterprise Dr	Romeoville	WI	2220
TS	9105	T-1A	IL 53 Independence Blvd	135th St Romeo Rd	Romeoville	WI	2221
TS	9115	T-1A	IL 53 Independence Blvd	Belmont Ave	Romeoville	WI	2222
TS	9120	T-1A	IL 53 Independence Blvd	Murphy Dr	Romeoville	WI	2223
TS	9125	T-1A	New Ave	135th St	Romeoville	WI	2224
TS	9130	T-1A	IL 53 Independence Blvd	Taylor Rd	Romeoville	WI	2225
TS	11045	T-1A	US 45 LaGrange Rd 96th Ave	Colorado Ave	Frankfort	WI	2226
TS	11047	T-1A	US 45 LaGrange Rd 96th Ave	Market St	Frankfort	WI	2227
TS	11135	T-1A	IL 53	1st St	Wilmington	WI	2228
TS	11625	T-1A	IL 53	University Pkwy	Romeoville	WI	2229
TS	11630	T-1A	US 45 LaGrange Rd 96th Ave	St Frances Rd	Frankfort	WI	2230
TS	11633	T-1A	US 30	80th Ave	Frankfort	WI	2231
TS	11634	T-1A	US 30	Frankfort Square Ent	Frankfort	WI	2232
TS	11950	T-1A	US 52 IL 53 Chicago St	Patterson Rd	Joliet	WI	2233
TS	11955	T-1A	US 30 IL 59 Division St	Lockport St	Plainfield	WI	2234
TS	12260	T-1A	I 55	US 6 East Ramp	Channahon	WI	2235
TS	12265	T-1A	I 55	US 6 West Ramp	Channahon	WI	2236
TS	12266	T-1A	US 6 Eames Rd	Tryon St	Channahon	WI	2237
TS	12267	T-1A	US 6 Eames Rd	Bluff Rd	Channahon	WI	2238

TS	12268	T-1A	US 6 Eames Rd	Roberts Rd Steve Rittof Dr	Channahon	WI	2239
TS	12269	T-1A	US 6 Eames Rd	Bell Rd	Channahon	WI	2240
TS	12271	T-1A	US 6	McKinley Woods Dr	Channahon	WI	2241
TS	20561	T-1A	IL 7 IL 53	Caton Farm Rd	Crest Hill	WI	2242
TS	20600	T-1A	US 6	Brandon Rd	Rockdale	WI	2243
TS	20968	T-1A	US 30	New Van Dyke Rd	Plainfield	WI	2244
TS	20969	T-1A	IL 126	Drauden Rd Steiner Rd	Plainfield	WI	2245
TS	20970	T-1A	IL 126	Wallin Dr	Plainfield	WI	2246
TS	20971	T-1A	IL 126	New Van Dyke Rd	Plainfield	WI	2247
TS	20972	T-1A	US 30	135th St	Plainfield	WI	2248
TS	20979	T-1A	US 30	127th St	Plainfield	WI	2249
TS	21020	T-1A	US 6 Maple St	Briggs St Fernwood Ave	Joliet	WI	2250
TS	21135	T-1A	US 30 Lincoln Hwy	School House Rd Schmuhl Rd	New lenox	WI	2251
TS	21393	T-1A	US 30	111th St	Plainfield	WI	2252
TS	21435	T-1A	IL 53	Manhattan Rd	Elwood	WI	2253
TS	21437	T-1A	IL 53	East Access Rd Strawn Dr	Elwood	WI	2254
TS	21465	T-1A	IL 59	103rd St	Naperville	WI	2255
TS	21516	T-1A	IL 43 Harlem Ave	Benton Rd	Rich	WI	2256
TS	21565	T-1A	US 45 LaGrange Rd 96th Ave	La Porte Rd	Frankfort/Mokena	WI	2257
TS	21570	T-1A	IL 53 Chicago St	Mills Rd	Joliet	WI	2258
TS	21590	T-1A	Joliet Rd	International Pkwy	Bolingbrook	WI	2259
TS	21820	T-1A	I 80 North Ramp	IL 53 Chicago Ave	Joliet	WI	2260
TS	21825	T-1A	US 6 US 52 McDonald St	IL 53 Chicago St	Joliet	WI	2261
TS	21860	T-1A	IL 59	111th St	Naperville	WI	2262
TS	21861	T-1A	IL 59	Royal Worthington Dr	Naperville	WI	2263
TS	21862	T-1A	IL 59	127th St	Plainfield	WI	2264
TS	21863	T-1A	IL 59	119th St	Plainfield	WI	2265
TS	21864	T-1A	IL 59	135th St	Plainfield	WI	2266
TS	21880	T-1A	US 6 Channahon Rd	Caterpillar W Dr Johns Manville Ent	Joliet	WI	2267
TS	21881	T-1A	US 6 Channahon Rd	Caterpillar E Dr	Joliet	WI	2268
TS	21882	T-1A	US 6	Empress Casino Ent	Joliet	WI	2269
TS	21883	T-1A	US 6	McClintock Rd	Channahon	WI	2270
TS	21893	T-1A	IL 59	Cantore Dr	Naperville	WI	2271
TS	21895	T-1A	IL 59	95th St	Naperville	WI	2272
TS	21897	T-1A	IL 59	Lacrosse Ln	Naperville	WI	2273
TS	21900	T-1A	US 6 Channahon Rd	Busch Pkwy	Joliet	WI	2274
TS	21925	T-1A	I 80 North Ramp	Houbolt Ave	Joliet	WI	2275
TS	21926	T-1A	I 80 South Ramp	Houbolt Ave	Joliet	WI	2276
TS	22055	T-1A	IL 43 Harlem Ave	St Frances Rd	Frankfort	WI	2277

TS	22180	T-1A	I 55	US 52 Jefferson St East	Shorewood	WI	2278
TS	22185	T-1A	I 55	US 52 Jefferson St West	Shorewood	WI	2279
TS	22191	T-1A	I 55 East Frontage Rd	US 52 Jefferson St	Shorewood	WI	2280
TS	75111	T-1A	IL 7	I 355 West Ramp	Lockport	WI	2281
TS	75112	T-1A	IL 7	I 355 East Ramp	Lockport	WI	2282

Location #		Type	Main Route	Cross Street	City	Co.	Qty
TS	11723	T-1B	183rd St	Central Rd	Tinley Park	CO	1
TS	2690	T-1B	IL 56 Butterfield Rd	Washington Blvd	Bellwood/Hillside	CO	2
TS	3519	T-1B	Thorton Lansing Rd	Stony Island Ave Volbrecht Rd	Thornton/Lansing	CO	3
TS	3972	T-1B	119th St	Page St	Calumet	CO	4
TS	5127	T-1B	IL 394 East Ramp	Glenwood Dyer Rd	Lynwood	CO	5
TS	5128	T-1B	IL 394 West Ramp	Glenwood Dyer Rd	Lynwood	CO	6
TS	78	T-1B	US 12-20-45 Mannheim Rd	Gladys Ave	Bellwood	CO	7
TS	8770	T-1B	111th St	Oketo Ave	Worth	CO	9
TS	12070	T-1B	IL 64 North Ave	Powis Rd	St. Charles	DU	10
TS	20333	T-1B	IL 53	Spring Ave	Glen ellyn	DU	11
TS	6163	T-1B	IL 19 Irving Pk Rd	Catalpa Ave	Itasca	DU	12
TS	6366	T-1B	IL 59	Smith Rd	Wayne	DU	13
TS	11980	T-1B	IL 25	Grant St	North Aurora	KA	14
TS	21962	T-1B	US 20	Big Timber Rd	Hampshire	KA	15
TS	221	T-1B	IL 72	State Rd Getzelman Rd	Hampshire	KA	16
TS	22052	T-1B	IL 21 Milwaukee Ave	Continental Dr	Vernon Hills	LA	17
TS	6690	T-1B	US 45	Rollins Rd	Grayslake	LA	18
TS	6925	T-1B	IL 60 IL 83	Midlothian Rd	Mundelein	LA	19
TS	6943	T-1B	IL 120 Belvedere Rd	Atkinson Rd	Grayslake	LA	20
TS	6980	T-1B	IL 83	IL 137	Grayslake	LA	21
TS	7053	T-1B	IL 173	Kenosha Rd	Zion	LA	22
TS	7133	T-1B	IL 173	Kilbourne Rd	Wadsworth	LA	23
TS	15085	T-1B	IL 47	Country Club Rd	Woodstock	MC	24
TS	21973	T-1B	IL 23	Coral Ave Pleasant Grove Rd	Marengo	MC	25
TS	7313	T-1B	IL 31	Ringwood Rd	Ringwood	MC	26
TS	11140	T-1B	I 55 SB Exit Ramp	IL 113	Diamond	WI	27
TS	20974	T-1B	US 30 Lincoln Hwy	US 30 143rd St	Plainfield	WI	28
TS	7388	T-1B	New Lenox Rd	Briggs St	Joliet	WI	29
TS	7393	T-1B	I 80 Ramps C/B & A/D	Briggs St	Joliet	WI	30
TS	7514	T-1B	IL 7 159th St	Bell Rd South	Homer Glen	WI	31
TS	7583	T-1B	IL 126	Essington Rd	Plainfield	WI	32
TS	7626	T-1B	IL 7 159th St/SW Hwy	Parker Rd	Homer Glen	WI	33

Location #		Type	Main Route	Cross Street	City	Co.	Qty
TSFL	28	T-2A	US 12 Lee St	Park Pl	Des Plaines	CO	1
TSFL	490	T-2A	107th St	Kean Ave	Palos Hills	CO	2
TSFL	566	T-2A	123rd St McCarthy	86th Ave	Palos Park	CO	3
TSFL	1301	T-2A	US 20 Lake St East of	Elgin-O'Hare WB	Addison	DU	4
TSFL	1302	T-2A	IL 53 West of	Elgin-O'Hare EB	Addison	DU	5
TSFL	1303	T-2A	Elgin-O'Hare WB	US 20 WB	Addison	DU	6
TSFL	1304	T-2A	Elgin-O'Hare EB	IL 53 Middle Sign Truss	Addison	DU	7
TSFL	1305	T-2A	Elgin-O'Hare EB	IL 53 West Sign Truss	Addison	DU	8
TSFL	10697	T-2A	IL 72	Big Timber Rd	Rutland	KA	9
TSFL	170	T-2A	IL 31	Moosehart Rd	Batavia Tnsp	KA	10
TSFL	204	T-2A	IL 47	Burlington Blacktop	Burlington	KA	11
TSFL	210	T-2A	IL 47	Main St Kaneville	Kaneville	KA	12
TSFL	228	T-2A	IL 47	Plato Rd W/B Red	Plato	KA	13
TSFL	1210	T-2A	US 41	Between Deerfield Rd and West Park Ave	Highland Park	LA	14
TSFL	1306	T-2A	IL 137 Buckley Rd	IL 137 Amstutz Expwy	North Chicago	LA	15
TSFL	765	T-2A	IL 132 Grand Ave	Fairfield Rd	Lake Villa	LA	16
TSFL	825	T-2A	IL 23	Kishwaukee Valley	Marengo	MC	17
TSFL	830	T-2A	IL 47	IL 173	Hebron	MC	18
TSFL	835	T-2A	IL 47	Charles St	Woodstock	MC	19
TSFL	840	T-2A	IL 120	Charles St	McHenry	MC	20
TSFL	851	T-2A	IL 173	Alden Rd	Alden	MC	21
TSFL	855	T-2A	IL 173	Wilmot Rd	Fox lake	MC	22
TSFL	1085	T-2A	IL 129	Coal City Rd	Coal City	WI	23
TSFL	1086	T-2A	IL 129	Strip Mine Rd	Wilmington	WI	24
TSFL	11950	T-2A	US 52 IL 53 Chicago Ave	Patterson Rd NB	Joliet	WI	25
TSFL	149	T-2A	US 45	Steger Rd	Frankfort	WI	26
TSFL	16	T-2A	US 6 Southwest Hwy	Parker Rd	New Lenox Twnsp	WI	27
TSFL	18	T-2A	US 6 Southwest Hwy	Gougar Rd	New Lenox Twnsp	WI	28
TSFL	2515	T-2A	US 45	US 52	Peotone	WI	29
TSFL	890	T-2A	US 45	Manhattan Monee Rd	Green Garden	WI	30
TSFL	895	T-2A	US 45 US 52 Main St	US 52 Wilmington Peotone	Peotone	WI	31
TSFL	913	T-2A	IL 50 Cicero Ave	Peotone Rd	Peotone	WI	32
TSFL	925	T-2A	Governors Hwy	Stunkel Rd	University Park	WI	33
TSFL	930	T-2A	Manhattan Monee Rd	Cedar Rd	East of Manhattan	WI	34

Location #		Type	Main Route	Cross Street	City	Co.	Qty
TSFL	21	T-2B	US 12 Lee St	Park Pl	Des Plaines	CO	1
TSFL	22	T-2B	132nd St	Kedzie Ave	Blue Island	CO	2
TSFL	158	T-2B	Wolf Rd	151st St	Orland park	CO	3
TSFL	195	T-2B	I 80 I 94 EB Right	Torrence Ave	Lansing	CO	4
TSFL	196	T-2B	I 80 I 94 EB Left	Torrence Ave	Lansing	CO	5
TSFL	197	T-2B	I 80 I 94 WB Right	Torrence Ave	Lansing	CO	6
TSFL	198	T-2B	I 80 I 94 EB Left	Torrence Ave	Lansing	CO	7
TSFL	330	T-2B	US 14 Northwest Hwy	IL 68 Dundee Rd	Inverness	CO	8
TSFL	332	T-2B	US 14 Northwest Hwy	Chicago Northwestern RR	Des Plaines	CO	9
TSFL	480	T-2B	87th St	Southwest Hwy Columbus Dr	Hometowne	CO	10
TSFL	590	T-2B	Palatine Rd EB Frontage	East of Wheeling Rd	Wheeling	CO	11
TSFL	591	T-2B	Palatine Rd WB Frontage	West of Wolf Rd	Wheeling	CO	12
TSFL	595	T-2B	Sheridan Rd	Burnham Ave	Evanston	CO	13
TSFL	600	T-2B	Sheridan Rd	Main St	Evanston	CO	14
TSFL	601	T-2B	Sheridan Rd	Main St NB	Evanston	CO	15
TSFL	1123	T-2B	IL 83 Cal Sag Rd	Ridgeland Ave NB	Palos Heights	CO	16
TSFL	1140	T-2B	US 12 20 45 Mannheim Rd	Canterbury St Waterford Dr	Westchester	CO	17
TSFL	1141	T-2B	Grand Ave EB Near Right	Elmwood Park Railroad Crossing	Elmwood Park	CO	18
TSFL	1142	T-2B	Grand Ave EB Far Right	Elmwood Park Railroad Crossing	Elmwood Park	CO	19
TSFL	1143	T-2B	Grand Ave WB Near Right	Elmwood Park Railroad Crossing	Elmwood Park	CO	20
TSFL	1144	T-2B	Grand Ave WB Far Right	Elmwood Park Railroad Crossing	Elmwood Park	CO	21
TSFL	1151	T-2B	IL 59 SB Near Side	Lake Cook Rd	Barrington	CO	22
TSFL	1152	T-2B	IL 59 SB Far Side	Lake Cook Rd	Barrington	CO	23
TSFL	1153	T-2B	IL 59	Lake Cook Rd WB Near Side	Barrington	CO	24
TSFL	1154	T-2B	IL 59	Lake Cook Rd WB Far Side	Barrington	CO	25
TSFL	1222	T-2B	LaGrange Rd NB	Weeping Willow Rd	Hodgkins	CO	26
TSFL	1223	T-2B	LaGrange Rd SB	Weeping Willow Rd	Hodgkins	CO	27
TSFL	1251	T-2B	IL 43 Waukegan Rd	Voltz Rd	Northbrook	CO	28
TSFL	1290	T-2B	203 rd St	Crawford Ave NB	Matteson/Olympia Fields	CO	29
TSFL	1291	T-2B	203 rd St	Crawford Ave SB	Matteson/Olympia Fields	CO	30
TSFL	1295	T-2B	US 14 WB	Broadway St	Des Plaines	CO	31
TSFL	1296	T-2B	US 14 WB Left	Broadway St	Des Plaines	CO	32

TSFL	1297	T-2B	Wolf Rd NB	Camp McDonald Rd	Prospect Heights	CO	33
TSFL	1298	T-2B	Oakton St EB	Bussee Hwy	Elk Grove	CO	34
TSFL	1300	T-2B	US 14 EB	Cumberland Ave Metra	Des Plaines	CO	35
TSFL	1320	T-2B	US 20 Lake St	Bluff City Rd Lovell St WB	Elgin	CO	36
TSFL	1321	T-2B	US 20 Lake St	Barrington Rd	Hanover Park	CO	37
TSFL	1471	T-2B	US 34 WB Ogden Ave	West of Joliet Rd	Lyons	CO	38
TSFL	1472	T-2B	US 34 EB Ogden Ave	Leland Ave	Lyons	CO	39
TSFL	1825	T-2B	IL 1 Halsted St	171st St NB	East Hazel Crest	CO	40
TSFL	1945	T-2B	IL 19 Irving Park Rd	Des Plaines River Rd SB	Des Plaines	CO	41
TSFL	2620	T-2B	IL 50 Cicero Ave	Southwest Hwy	Oak Lawn	CO	42
TSFL	2690	T-2B	IL 56 Butterfield Rd	Washington Blvd	Bellwood/Hillside	CO	43
TSFL	2760	T-2B	IL 58 Golf Rd WB	Gannon Dr	Hoffman Estates	CO	44
TSFL	2761	T-2B	IL 58 Golf Rd EB	Gannon Dr	Hoffman Estates	CO	45
TSFL	3150	T-2B	IL 62 Algonquin Rd WB	Bateman Rd	Barrington Hills	CO	46
TSFL	3151	T-2B	IL 62 Algonquin Rd EB	Bateman Rd	Barrington Hills	CO	47
TSFL	3152	T-2B	IL 62 Algonquin Rd	Bateman Rd SB	Barrington Hills	CO	48
TSFL	3153	T-2B	IL 62 Algonquin Rd	Bateman Rd NB	Barrington Hills	CO	49
TSFL	3154	T-2B	IL 62 Algonquin Rd	Old Sutton Rd NB	Barrington Hills	CO	50
TSFL	3155	T-2B	IL 62 Algonquin Rd	Old Sutton Rd SB	Barrington Hills	CO	51
TSFL	3156	T-2B	IL 62 Algonquin Rd	Old Sutton Rd EB	Barrington Hills	CO	52
TSFL	3157	T-2B	IL 62 Algonquin Rd	Old Sutton Rd WB	Barrington Hills	CO	53
TSFL	3160	T-2B	IL 68 Dundee Rd WB	Old Sutton Rd	Barrington Hills	CO	54
TSFL	3161	T-2B	IL 68 Dundee Rd EB	Old Sutton Rd	Barrington Hills	CO	55
TSFL	3162	T-2B	IL 68 Dundee Rd	Old Sutton Rd SB	Barrington Hills	CO	56
TSFL	3163	T-2B	IL 68 Dundee Rd	Old Sutton Rd NB	Barrington Hills	CO	57
TSFL	3168	T-2B	IL 68 Dundee Rd	Sterling Ave	Palatine	CO	58
TSFL	3300	T-2B	IL 72 Higgins Rd	East of Canfield Ave	Park Ridge	CO	59
TSFL	3325	T-2B	IL 72 Higgins Rd WB	Gannon Dr	Hoffman Estates	CO	60
TSFL	3326	T-2B	IL 72 Higgins Rd EB	Gannon Dr	Hoffman Estates	CO	61
TSFL	3540	T-2B	95th St NW	IL 171 Archer Ave	Willow Springs	CO	62
TSFL	3542	T-2B	95th St NE	IL 171 Archer Ave	Willow Springs	CO	63
TSFL	3544	T-2B	IL 171 Archer Ave NE	95th St	Willow Springs	CO	64
TSFL	3546	T-2B	IL 171 Archer Ave SW	95th St	Willow Springs	CO	65
TSFL	3555	T-2B	IL 171 Archer Ave SB Left Side	55th St	Summit	CO	66
TSFL	3556	T-2B	IL 171 Archer Ave SB Right Side	55th St	Summit	CO	67
TSFL	3575	T-2B	IL 171 Archer Ave NB Right Side	44th St	Lyons/McCook	CO	68
TSFL	3576	T-2B	IL 171 Archer Ave NB Left Side	44th St	Lyons/McCook	CO	69

TSFL	3936	T-2B	Crawford Ave Pulaski Rd	123rd St NB	Alsip	CO	70
TSFL	4034	T-2B	135th St EB	West of Ridgeland Ave	Palos Heights	CO	71
TSFL	4036	T-2B	135th St WB	West of Ridgeland Ave	Palos Heights	CO	72
TSFL	4660	T-2B	IL 59 NB	West Bartlett Rd	Bartlett	CO	73
TSFL	5240	T-2B	Francisco Ave	Broadway St	Robbins	CO	74
TSFL	5930	T-2B	Willow Rd	Old Willow Rd West of	Northbrook	CO	75
TSFL	9670	T-2B	IL 83 NB Elmhurst Rd	Lincoln Ave	Mt Prospect	CO	76
TSFL	9671	T-2B	IL 83 SB Elmhurst Rd	Lincoln Ave	Mt Prospect	CO	77
TSFL	11245	T-2B	US 12 45 Lee St	US 12-45 Manheim Rd WB	Des Plaines	CO	78
TSFL	11246	T-2B	US 12 45 Lee St	US 12-45 Manheim Rd NB	Des Plaines	CO	79
TSFL	11715	T-2B	Western Ave	Sauk Trail WB	Park Forest	CO	80
TSFL	11720	T-2B	IL 50 Cicero Ave	175th St	Country Club Hills	CO	81
TSFL	11725	T-2B	Dixie Hwy	Flossmoor Rd Cambridge Ave	Flossmoor	CO	82
TSFL	11744	T-2B	IL 394	Sauk Trail SB RT	Sauk Village	CO	83
TSFL	11745	T-2B	IL 394 Bishop Ford	Sauk Trail NB	Sauk Village	CO	84
TSFL	11751	T-2B	US 6 WB 159thth St	Park Ave Right Side	Harvey	CO	85
TSFL	11760	T-2B	US 12-20 95th St	I 294 Off Ramp WB E of 76th Ave Left	Bridgeview	CO	86
TSFL	11761	T-2B	US 12-20 95th St	I 294 Off Ramp WB E of 76th Ave Right	Bridgeview	CO	87
TSFL	11765	T-2B	US 12-20 95th St	88th Ave EB	Hickory Hills	CO	88
TSFL	11770	T-2B	Southwest Hwy NEB	Ridgeland Ave	Chicago Ridge	CO	89
TSFL	11795	T-2B	EB US 12 95TH St	Marianos West of RR Tracks	Evergreen Park	CO	90
TSFL	11796	T-2B	EB US 12 95TH St	Marianos East of RR Tracks	Evergreen Park	CO	91
TSFL	11797	T-2B	WB US 12 95TH St	Marianos East of RR Tracks	Evergreen Park	CO	92
TSFL	11798	T-2B	WB US 12 95TH St	Marianos West of RR Tracks	Evergreen Park	CO	93
TSFL	11870	T-2B	IL 72 Higgins Rd	Lee St Trammel Crow SB	Des Plaines	CO	94
TSFL	12015	T-2B	IL 56 Butterfield Rd	Taft Ave EB	Hillside	CO	95
TSFL	12025	T-2B	Lawrence Ave	25th Ave Ruby St EB	Schiller Park	CO	96
TSFL	21475	T-2B	IL 171 Archer Ave	Bell Rd WB	Lemont	CO	97
TSFL	21476	T-2B	IL 171 Archer Ave	131st St NB LS	Lemont	CO	98
TSFL	21477	T-2B	IL 171 Archer Ave	131st St NB RS	Lemont	CO	99
TSFL	21478	T-2B	IL 171 Archer Ave	131st ST SB LS	Lemont	CO	100
TSFL	21479	T-2B	IL 171 Archer Ave	131st St SB RS	Lemont	CO	101
TSFL	587	T-2B	IL 83	91st St EB	Darien	DU	102

TSFL	635	T-2B	IL 59	Joliet Rd	West Chicago	DU	103
TSFL	640	T-2B	IL 59	Ingalton Ave	West Chicago	DU	104
TSFL	1117	T-2B	IL 38 Roosevelt Rd	Garys Mill Rd NB	West Chicago	DU	105
TSFL	1118	T-2B	IL 38 Roosevelt Rd	Garys Mill Rd SB	Winfield	DU	106
TSFL	1165	T-2B	IL 83 SB	Red Oak Ln	Wood Dale	DU	107
TSFL	1166	T-2B	IL 83 NB	Red Oak Ln	Wood Dale	DU	108
TSFL	1308	T-2B	US 20 Lake St WB	Garden Ave	Roselle	DU	109
TSFL	1309	T-2B	US 20 Lake St EB	Garden Ave	Addison	DU	110
TSFL	1310	T-2B	IL 19 Irving Park Rd WB	Bloomingdale Rd	Itasca	DU	111
TSFL	8853	T-2B	IL 59	Hawthorn Ln SB	West Chicago	DU	112
TSFL	15100	T-2B	IL 19 Irving Park Rd WB	Wood Dale Rd	Wood Dale	DU	113
TSFL	15101	T-2B	IL 19 Irving Park Rd EB	Wood Dale Rd	Wood Dale	DU	114
TSFL	140	T-2B	US 20	Damisch Rd Pingree Grove Rd	Pingree Grove	KA	115
TSFL	150	T-2B	US 20	Marshall Rd West of	Pingree Grove	KA	116
TSFL	151	T-2B	US 20 West	Marshall Rd	Pingree Grove	KA	117
TSFL	160	T-2B	US 20 1/2 Mile West of	Pinegree Grove Rd	Pingree Grove	KA	118
TSFL	191	T-2B	IL 47	IL 64 EB	Lily lake	KA	119
TSFL	201	T-2B	IL 47 SB	Burlington Blacktop	Burlington	KA	120
TSFL	203	T-2B	IL 47 NB	Burlington Blacktop	Burlington	KA	121
TSFL	211	T-2B	IL 47	Main St Kaneville Rd	Kaneville	KA	122
TSFL	212	T-2B	IL 47	Main St Kaneville Rd	Kaneville	KA	123
TSFL	222	T-2B	IL 47	Plato Rd NB Right	Plato	KA	124
TSFL	223	T-2B	IL 47	Plato Rd NB Left	Plato	KA	125
TSFL	224	T-2B	IL 47	Plato Rd SB Left	Plato	KA	126
TSFL	225	T-2B	IL 47	Plato Rd SB Rigt	Plato	KA	127
TSFL	754	T-2B	IL 25 NB	Cherokee Rd Bolz Rd	Carpentersville	KA	128
TSFL	762	T-2B	IL 72 EB	Randall Rd	Dundee	KA	129
TSFL	763	T-2B	IL 72 WB	Randall Rd	West dundee	KA	130
TSFL	857	T-2B	IL 38	St Charles Boys School	St Charles	KA	131
TSFL	10698	T-2B	IL 72	Big Timber EB	Rutland	KA	132
TSFL	10699	T-2B	IL 72	Big Timber WB	Rutland	KA	133
TSFL	21984	T-2B	US 20	Brier Hill Rd Allen Rd NB Red Flasher	Hampshire	KA	134
TSFL	21985	T-2B	US 20	Brier Hill Rd Allen Rd EB Red Flasher	Hampshire	KA	135
TSFL	21986	T-2B	US 20	Brier Hill Rd Allen Rd NB US 20 Yellow Flasher	Hampshire	KA	136
TSFL	21987	T-2B	US 20	Brier Hill Rd Allen Rd SB US 20 Yellow Flasher	Hampshire	KA	137
TSFL	660	T-2B	US 12 IL 59	IL 134	Fox Lake	LA	138

TSFL	661	T-2B	US 12 IL 59	IL 134	Fox Lake	LA	139
TSFL	701	T-2B	IL 53	Robert Parker Coffin Rd EB	Long Grove	LA	140
TSFL	715	T-2B	IL 59	Monaville Rd	Lake Villa	LA	141
TSFL	716	T-2B	IL 59	Monaville Rd S	Lake Villa	LA	142
TSFL	727	T-2B	IL 60	Lake Forest Academy	Lake Forest	LA	143
TSFL	740	T-2B	IL 120	Almond Lake Rd	Gages Lake	LA	144
TSFL	741	T-2B	IL 120 WB	Almond Lake Rd	Gages Lake	LA	145
TSFL	748	T-2B	IL 120 WB South	Bacon Rd	Round Lake	LA	146
TSFL	749	T-2B	IL 120 WB	Bacon Rd	Round Lake	LA	147
TSFL	766	T-2B	US 14 SEB	Cuba Rd	Barrington Hills	LA	148
TSFL	767	T-2B	US 14 NWB	Cuba Rd	Barrington Hills	LA	149
TSFL	768	T-2B	US 14	Cuba Rd E/B	Barrington Hills	LA	150
TSFL	769	T-2B	US 14	Cuba Rd W/B	Barrington Hills	LA	151
TSFL	967	T-2B	US 12	Old Rand Rd South	Lake Zurich	LA	152
TSFL	998	T-2B	US 12 IL 59 NB	Sullivan Lake Rd Molidor Rd	Lakemoor	LA	153
TSFL	999	T-2B	US 12 IL 59 SB	Sullivan Lake Rd Molidor Rd	Lakemoor	LA	154
TSFL	1150	T-2B	US 14	Berry Rd	Barrington	LA	155
TSFL	1155	T-2B	IL 59 NB	James St CN RR	Barrington	LA	156
TSFL	1156	T-2B	IL 59 SB Near Side	James St CN RR	Barrington	LA	157
TSFL	1157	T-2B	IL 59 SB Far Side	James St CN RR	Barrington	LA	158
TSFL	1158	T-2B	IL 59 NB Near	James St CN RR	Barrington	LA	159
TSFL	1193	T-2B	US 12	IL 59 Off Ramp	Wauconda	LA	160
TSFL	1211	T-2B	US 41	Deerfield Rd and West Park Ave	Highland Park	LA	161
TSFL	1212	T-2B	US 41	West Park NB	Highland Park	LA	162
TSFL	2113	T-2B	IL 60	Wilson SB	Volo	LA	163
TSFL	2116	T-2B	IL 173 EB	Tiffany Rd	Antioch	LA	164
TSFL	2117	T-2B	IL 173 WB	Tiffany Rd	Antioch	LA	165
TSFL	2121	T-2B	IL 173	Linden Lane	Antioch	LA	166
TSFL	6625	T-2B	IL 176 WB	US 45	Mundelein	LA	167
TSFL	6916	T-2B	IL 176 EB	Hawley west	Hawthorn Woods	LA	168
TSFL	6917	T-2B	IL 176 WB	Hawley west	Hawthorn Woods	LA	169
TSFL	11945	T-2B	US 12	State Park Rd East St	Fox Lake	LA	170
TSFL	12315	T-2B	IL 83	Washington St SB	Grayslake	LA	171
TSFL	21755	T-2B	US 45	Grass Lake Rd SB	Millburn	LA	172
TSFL	100	T-2B	IL 31 NB	Half Mile Trail	Round Lake	MC	173
TSFL	101	T-2B	IL 31 SB	Half Mile Trail	Round Lake	MC	174
TSFL	105	T-2B	IL 31 NB	Edgewood Rd	Tower Lakes	MC	175
TSFL	106	T-2B	IL 31 SB	Edgewood Rd	Tower Lakes	MC	176
TSFL	110	T-2B	IL 31 NB	Ames Rd	Tower Lakes	MC	177

TSFL	111	T-2B	IL 31 SB	Ames Rd	Tower Lakes	MC	178
TSFL	752	T-2B	IL 23 State Rd NB	River Rd	Marengo	MC	179
TSFL	753	T-2B	IL 23 State Rd SB	River Rd	Marengo	MC	180
TSFL	760	T-2B	IL 23 State Rd	River Rd EB	Marengo	MC	181
TSFL	761	T-2B	IL 23 State Rd	River Rd WB	Marengo	MC	182
TSFL	764	T-2B	US 12 NB	Sunset Rd	Fox lake	MC	183
TSFL	836	T-2B	IL 47 SB	O'Brien Dr	Hebron	MC	184
TSFL	837	T-2B	IL 47 NB	O'Brien Dr	Hebron	MC	185
TSFL	852	T-2B	IL 173	Alden Rd EB	Alden	MC	186
TSFL	853	T-2B	IL 173	IL 173 @ Alden Rd WB	Alden	MC	187
TSFL	856	T-2B	IL 173	WB West of Converse Rd	Fox lake	MC	188
TSFL	11880	T-2B	IL 176	Roberts Rd	Island Lake	MC	189
TSFL	11890	T-2B	IL 176 EB	Haligus St	Lakewood	MC	190
TSFL	11892	T-2B	IL 176 WB	Haligus St	Lakewood	MC	191
TSFL	11948	T-2B	US 12	Solon Rd NB	Richmond	MC	192
TSFL	11949	T-2B	US 12	Solon Rd SB	Richmond	MC	193
TSFL	21967	T-2B	US 20	South Union SB South Union Red Flasher	Coral Township	MC	194
TSFL	21968	T-2B	US 20 NB	Marengo Rd	Coral Township	MC	195
TSFL	21969	T-2B	US 20 SB	Marengo Rd	Coral Township	MC	196
TSFL	21970	T-2B	US 20 NB	Union Rd	Coral Township	MC	197
TSFL	21971	T-2B	US 20	Marengo Rd Beck Rd WB	Coral Township	MC	198
TSFL	21972	T-2B	US 20	Marengo Rd Beck Rd EB	Coral Township	MC	199
TSFL	21973	T-2B	US 20 NB	Coral Rd	Marengo	MC	200
TSFL	21974	T-2B	US 20 SB	Coral Rd	Marengo	MC	201
TSFL	21976	T-2B	IL 23 NB	Coral Rd Pleasant Grove Rd	Marengo	MC	202
TSFL	21977	T-2B	IL 23 SB	Coral Rd Pleasant Grove Rd	Marengo	MC	203
TSFL	21978	T-2B	US 20	Coral Rd EB Red Flasher	Coral	MC	204
TSFL	21979	T-2B	US 20	Coral Rd WB Red Flasher	Coral	MC	205
TSFL	21980	T-2B	US 20	Harmony Rd EB Red Flasher	Harmony	MC	206
TSFL	21981	T-2B	US 20	Harmony Rd WB Red Flasher	Harmony	MC	207
TSFL	21982	T-2B	US 20	Harmony Rd NB US 20 Yellow Flasher	Harmony	MC	208
TSFL	21983	T-2B	US 20	Harmony Rd SB US 20 Yellow Flasher	Harmony	MC	209
TSFL	19	T-2B	US 6 Southwest Hwy	Parker Rd EB	New Lenox	WI	210

					Twnsp		
TSFL	23	T-2B	US 6 Southwest Hwy	Parker Rd WB	New Lenox Twnsp	WI	211
TSFL	145	T-2B	US 45 NB	Steger Rd	Frankfort	WI	212
TSFL	146	T-2B	US 45 SB	Steger Rd	Frankfort	WI	213
TSFL	156	T-2B	183rd St	Wolf Rd NB	Orland Park	WI	214
TSFL	157	T-2B	183rd St	Wolf Rd SB	Orland Park	WI	215
TSFL	865	T-2B	I 80	Wheeler Ave	Joliet	WI	216
TSFL	866	T-2B	I 80	Wheeler Ave EB	Joliet	WI	217
TSFL	900	T-2B	US 52 State St	North St	Manhattan	WI	218
TSFL	901	T-2B	US 52 State St SB	North St	Manhattan	WI	219
TSFL	902	T-2B	US 52 State St NB	North St	Manhattan	WI	220
TSFL	927	T-2B	IL 53 Bolingbrook Dr	Royce Rd SB	Bolingbrook	WI	221
TSFL	1029	T-2B	IL 126 WB Right Side East of RR	East of IL 59	Plainfield	WI	222
TSFL	1030	T-2B	IL 126 WB Right Side West of RR	East of IL 59	Plainfield	WI	223
TSFL	1034	T-2B	IL 126	Essington Rd WB	Plainfield	WI	224
TSFL	1088	T-2B	IL 129	Strip Mine Rd NB	Wilmington	WI	225
TSFL	1089	T-2B	IL 129	Strip Mine Rd SB	Wilmington	WI	226
TSFL	1091	T-2B	IL 394 S/B Left Side	Richton Rd	Crete	WI	227
TSFL	1092	T-2B	IL 394 S/B Right Side	Richton Rd	Crete	WI	228
TSFL	1093	T-2B	IL 394 N/B Left Side	Richton Rd	Crete	WI	229
TSFL	1094	T-2B	IL 394 N/B Right Side	Richton Rd	Crete	WI	230
TSFL	1096	T-2B	IL 394	Burrville Rd NB Left Side	Crete	WI	231
TSFL	1097	T-2B	IL 394	Burrville Rd NB Right Side	Crete	WI	232
TSFL	1098	T-2B	IL 394	Burrville Rd SB Left Side	Crete	WI	233
TSFL	1099	T-2B	IL 394	Burrville Rd SB Right Side	Crete	WI	234
TSFL	1125	T-2B	I 80	IL 53 Water St	Joliet	WI	235
TSFL	1126	T-2B	I 80	Water St EB Left	Joliet	WI	236
TSFL	1127	T-2B	I 80	Water St WB	Joliet	WI	237
TSFL	1128	T-2B	I 80	Water St WB Left	Joliet	WI	238
TSFL	1131	T-2B	IL 53 NB	Manhattan Rd	Elwood	WI	239
TSFL	1132	T-2B	IL 53 NB	Manhattan Rd	Elwood	WI	240
TSFL	1133	T-2B	IL 53 SB	Manhattan Rd	Elwood	WI	241
TSFL	1134	T-2B	IL 53 SB	Manhattan Rd	Elwood	WI	242
TSFL	1136	T-2B	IL 53 NB	North River Rd	Wilmington	WI	243
TSFL	1137	T-2B	IL 53 SB	North River Rd	Wilmington	WI	244
TSFL	9126	T-2B	New Ave EB	135th St	Romeoville	WI	245
TSFL	11952	T-2B	US 52 IL 53 Chicago Ave	Patterson Rd NB	Joliet	WI	246

TSFL	11953	T-2B	US 52 IL 53 Chicago Ave	Patterson Rd SB	Joliet	WI	247
TSFL	11955	T-2B	IL 53 NB	Schweitzer Rd	Joliet	WI	248
TSFL	11956	T-2B	IL 53 SB	Schweitzer Rd	Joliet	WI	249
TSFL	11957	T-2B	IL 53	Schweitzer Rd EB	Joliet	WI	250
TSFL	11958	T-2B	IL 53	Schweitzer Rd WB	Joliet	WI	251
TSFL	20600	T-2B	US 6	Brandon Rd WB	Rockdale	WI	252

PLANNED MAINTENANCE LOCATIONS

Sys	Type	Loc. #	Main Route	Cross St	Co.	
L	EXP	L0445-J	I 57	147th St	CO	1
L	EXP	L0450-K	I 57	Kedzie Ave	CO	2
L	EXP	L0453-K1	I 57	I-294	CO	3
L	EXP	L0810-C	I 190 Kennedy	CN RR	CO	4
L	EXP	L0825-E	I 90 Kennedy	Cumberland Ave	CO	5
L	EXP	L0867-S	I 90 94 Kennedy	Grand Ave	CO	6
L	EXP	L0873-S2	I 90 94 Kennedy	Erie St	CO	7
L	EXP	L0890-Z	I 90 94 Kennedy	Van Buren St	CO	8
L	EXP	L1003-A	IL 394 Ford	Sauk Trail Rd	CO	9
L	EXP	L1075-P	I 94 Ryan	Stony Island Feeder & 106th St	CO	10
L	EXP	L1080-R	I 94 Ryan	Stony Island Feeder & 101St St	CO	11
L	EXP	L1085-S	I 94 Ryan	Stony Island Feeder & 98th PL	CO	12
L	EXP	L1090-T	I 94 Ryan	Stony Island Feeder & Woodlawn Ave	CO	13
L	EXP	L1260-N	I 94 Edens	Willow Rd	CO	14
L	EXP	L1465-K	I 290	Thorndale Ave	DU	15
L	EXP	L1468-L	I 290	Devon Ave	DU	16
L	EXP	L1471-L1	I 290	I-390	DU	17
L	EXP	L0195-T	I 55 Stev	County Line Rd	WI	18
L	EXP	L0510-A	I 57	Stuenkel Rd	WI	19
L	EXP	L0318-J	I 55 Stev	S Weber Rd	WI	20
L	ART	L1664-AF	IL 62 Algonquin Rd	Arlington Heights Rd	CO	21
L	ART	L1680-AL	IL 72 Higgins Rd	Touhy Ave	CO	22
L	ART	L1694-RO	US 12/45	Devon Ave	CO	23
L	ART	L1695-AN	Touhy Ave	I 90 Tollway	CO	24

L	ART	L1696-XV	Elmhurst Rd	I-90 Tollway	CO	25
L	ART	L1698-AQ	Wolf Rd	I 90 Tollway	CO	26
L	ART	L1710-BD	US 12 45 Mannheim	IL 19 Irving Park Rd	CO	27
L	ART	L1742-BE	US 12/45	Lawrence Ave	CO	28
L	ART	L1786-SV	IIL 171	55th St	CO	29
L	ART	L1788-SZ	IL 171	47th St	CO	30
L	ART	L1877-ZA	IL 83 147th St	Sacramento Ave	CO	31
L	ART	L2660-RN	IL 19 Irving Park Rd	I-390 EOH Tollway	CO	32
L	ART	L1905-DB	US 34 Ogden Ave	IL 59	DU	33
L	ART	L1931-UF	IL 59	I-88 Tollway	DU	34
L	ART	L1961-DF	IL 64 North Ave	IL 53 Columbine Ave	DU	35
L	ART	L1990-PC	IL 64 North Ave	Woodland Ave	DU	36
L	ART	L1991-PD	IL 64 North Ave	Powis Rd	DU	37
L	ART	L1992-PE	IL 64 North Ave	Kautz Rd Smith Rd	DU	38
L	ART	L2905-UV	IL 53	I-390 EOH Tollway	DU	39
L	ART	L2910-UI	Meacham Rd Medinah Rd	I-390 EOH Tollway	DU	40
L	ART	L2920-UP	US 20 Lake St	I-390 EOH Tollway	DU	41
L	ART	L2002-KB	IL 47	US 20 IL 72 North	KA	42
L	ART	L2003-KS	IL 47	US 20 IL 72 South	KA	43
L	ART	L2005-KI	US 20 Lake St	Mc Lean Blvd	KA	44
L	ART	L2012KF	US 30 Briarcliff Rd	IL 31 West Lake St	KA	45
L	ART	L2315-MZ	US 14	IL 31	MC	46
L	S/ART	L1923-UX	IL 53 Columbine Ave	Madison St	DU	47

Sys.	Type	Loc.	Main Route	Cross Street	Co.	Qty

		#				
P	PS-L	PS24	I 190 JFK	E. of Mannheim	CO	1
P	PS-L	PS27	I 94	110th St	CO	2
P	PS-S	PS47	IL 59	North Aurora Ave	DU	3

Sys.	Type	Loc. #	Cab. #	Main Route	Cross Street	Co.	Qty
S	S-1a	3075	E11	I 90 JFK	Cumberland Ave Exit (NW)	CO	1
S	S-1a	3080	E11	I 90 JFK	Cumberland Ave Ent (NW)	CO	2
S	S-1a	3085	E12	I 90 JFK	Cumberland Ave Ent (SE)	CO	3
S	S-1a	5390	C6	I 90 94 Ryan	Roosevelt Rd	CO	4
S	S-1a	5405	D4	I 90 94 Ryan	Taylor St	CO	5
S	S-2a	1000	B0	I 55 Stev	Martin Luther King Dr	CO	1
S	S-2a	1005	B1	I 55 Stev	Martin Luther King Dr	CO	2
S	S-2a	1225	29	I 55 Stev	Lawndale Ave	CO	3
S	S-2a	1240	31	I 55 Stev	Lawndale Ave	CO	4
S	S-2a	1245	40	I 55 Stev	Lawndale Ave	CO	5
S	S-2a	1325	57	I 55 Stev	County Line Rd East	CO	6
S	S-2a	3070	D122	I 90 JFK	Cumberland Ave	CO	7
S	S-2a	3505	S38	I 90 94 JFK	Ohio St	CO	8
S	S-2a	3640	Z1	I 90 94 JFK	Circle Int IB IKE @ Halsted	CO	9
S	S-2a	3645	Z1A	I 90 94 JFK	I 290 Circle Interchange	CO	10
S	S-2a	3650	Z3	I 90 94 JFK	Circle Int OB IKE @ Halsted	CO	11
S	S-2a	4175	N35	I 94 Edens	Willow Rd	CO	12
S	S-2a	5393	C6A	I 94 Ryan	Taylor St	CO	13
S	S-2a	5400	C3	I 94 Ryan	Taylor St	CO	14
S	S-2a	6220	L7	I 94 Ford	107th St	CO	15
S	S-2a	6225	L9	I 94 Ford	107th St	CO	16
S	S-2a	6230	L6	I 94 Ford	103rd St	CO	17
S	S-2a	6235	L4	I 94 Ford	Ellis Ave	CO	18
S	S-2a	8010	G1	I 290 IKE	Morgan St	CO	19
S	S-2a	8020	G4	I 290 IKE	Racine Ave	CO	20
S	S-2a	12080	17	Lake Shore Dr	S 31st St	CO	21
S	S-2a	12085	18	Lake Shore Dr	N 31st St	CO	22
S	S-2a	12095	20	Lake Shore Dr	23rd St	CO	23
S	S-2a	13050	31	Lake Shore Dr	Illinois St	CO	24

S	S-2a	1330	59	I 55 Stev	W County Line Rd	DU	1
S	S-2a	9195	J113	I 290 IL 53	1/2 Mi S Thorndale Ave (half mile south)	DU	2
S	S-2a	9200	J116	I 290 IL 53 IB	Thorndale Ave (south)	DU	3
S	S-2a	9205	J117	I 290 IL 53 OB	Thorndale Ave (south)	DU	4
S	S-2a	9210	L119	I 290 IL 53 IB	Thorndale Ave (NE)	DU	5
S	S-2a	9215	K118	I 290 IL 53 IB	Thorndale Ave (NW)	DU	6

S	S-3J	22455	DMS 115	US 12 20 45 Mannheim Rd	Lawrence Ave	CO	1
S	S-3k	2177	DMS 44	I 57	163rd St	CO	2
S	S-3l	11017	DMS 42	I-355 NB	US 20 Lake St (south)	DU	3
S	S-3l	9167	DMS 43	I 290 WB	Mill Rd	DU	4

S	S-4	IECC7	OP Camera	I 94	S of Lawrence Ave	CO	1
S	S-4	IECC8	OP Camera	I 94	Foster Ave	CO	2
S	S-5	IK25A	TM CAM	I 290	Thorndale Rd SB Ent Ramp	DU	3
S	S-4	ISCC10	OP Camera	I 90 94	Kimball Ave	CO	4
S	S-4	ISCC9	OP Camera	I 90 94	Sacramento Ave	CO	5
S	S-4	IWCC4	OPS CAM	I 90	Montrose Ave (north)	CO	6
S	S-4	IWCC8	OP Camera	I 90	S of Lawrence Ave	CO	7
S	S-4	IWCC9	OP Camera	I 90	N of Montrose Ave	CO	8
S	S-4	OMCC10	OP Camera	I 90 94	NE of Ohio St	CO	9
S	S-4	OMCC7	OP Camera	I 90 94	NW of Fulton St	CO	10
S	S-4	OMCC8	OP Camera	I 90 94	SE of Green St	CO	11
S	S-4	OMCC9	OP Camera	I 90 94	SE of Grand Ave	CO	12
S	S-4	OOCC7	OP Camera	Ontario St	Kennedy Split	CO	13
S	S-4	OOCC8	OP	Ontario St	E of Kennedy Split	CO	14

			Camera				
S	S-4	OOCC9	OP Camera	Ontario St	Chicago River	CO	15
S	S-4	OSCC7	OPS CAM	I 90 94	Diversey Ave (south)	CO	16
S	S-4	OSCC8	OP Camera	I 90 94	Fullerton Ave	CO	17
S	S-4	OSCC9	OP Camera	I 90 94	S of Diveresy Ave	CO	18

S	S-5	BF01A	TM Camera	Bishop Ford	Stony Island Feeder	CO	1
S	S-5	BF02	TM Camera	Bishop Ford	101st St	CO	2
S	S-5	BF02A	TM Camera	Bishop Ford	103Rd St	CO	3
S	S-5	BF02B	TM Camera	Bishop Ford	103Rd St	CO	4
S	S-5	BF02C	TM Camera	Bishop Ford	100th St	CO	5
S	S-5	BF02D	TM Camera	Bishop Ford	98th St	CO	6
S	S-5	FN03	TM Camera	IL 59	North Aurora Rd	DU	7
S	S-5	IK09	TM Camera	I 290	DesPlaines Ave	CO	8
S	S-5	IK0A	TM Camera	Congress Parkway	Chicago River	CO	9
S	S-5	IK0B	TM Camera	Congress Parkway	Chicago River	CO	10
S	S-5	IK0C	TM Camera	Congress Parkway	Chicago River	CO	11
S	S-5	IK0D	TM Camera	Congress Parkway	Chicago River	CO	12
S	S-5	IK0E	TM Camera	I 290	Jefferson St	CO	13
S	S-5	IK0F	TM Camera	I 290	Jefferson St	CO	14
S	S-5	IK0G	TM Camera	DesPlaines Ave	Van Buren St	CO	15
S	S-5	IK0H	TM Camera	DesPlaines Ave	Van Buren St	CO	16
S	S-5	IKOI	TM Camera	I 290	Halsted St	CO	17
S	S-5	IK0J	TM Camera	I 290	Halsted St	CO	18
S	S-5	IK0K	TM Camera	I 290	Racine Ave	CO	19
S	S-5	MR1	TM	US 12 20 45	Zemke Blvd	CO	20

			Camera	Mannheim Rd			
S	S-5	MR2	TM Camera	US 12 20 45 Mannheim Rd	IL 72 Higgins Rd	CO	21
S	S-5	MR3	TM Camera	US 12 20 45 Mannheim Rd	IL 19 Irving Park Rd	CO	22
S	S-5	MR4	TM Camera	US 12 20 45 Mannheim Rd	Montrose Ave	CO	23
S	S-5	MR5	TM Camera	US 12 20 45 Mannheim Rd	Lawrence Ave	CO	24
S	S-5	ST00	TM Camera	I 55	MLK Jr Dr	CO	25
S	S-5	ST0A	TM Camera	I 55	US 41 Lake Shore Dr	CO	26

Sys.	Loc. #	Type	Main Route	Cross Street	City	Co.	Qty
TS	20	T-1A	I 57	Ashland Ave 119th St	Calumet Park	CO	1
TS	30	T-1A	I 57 W Ramp	IL 83 147th St	Posen	CO	2
TS	31	T-1A	I 57 E Ramp	IL 83 Sibley Blvd 147th St	Posen	CO	3
TS	45	T-1A	Dixie Hwy	I 80 Tri StateTlwy	Hazel Crest	CO	4
TS	48	T-1A	171st St	Dixie Hwy	Hazel Crest	CO	5
TS	100	T-1A	I 290 Eisenhower	IL 171 1st Ave	Maywood	CO	6
TS	125	T-1A	IL 50 Cicero Ave	128th St	Alsip	CO	7
TS	150	T-1A	US 6 159th St	US 45 96th Ave LaGrange Rd Ramp	Orland Park	CO	8
TS	175	T-1A	US 6 159th St	IL 83 Torrence Ave	Calumet City	CO	9
TS	195	T-1A	US 6 IL 83 Torrence	170th St	Calumet City/Lansing	CO	10
TS	220	T-1A	US 6 159th St	Dixie Hwy	Markham	CO	11
TS	230	T-1A	US 6 159th St	Greenwood Rd	Calumet City	CO	12
TS	255	T-1A	US 6 159th St	Oak Park Ave	Tinley Park	CO	13
TS	280	T-1A	US 6 159th St	Ring Rd	Calumet City	CO	14
TS	345	T-1A	US 6 IL 83 Torrence	River Oaks South Entr 4	Calumet City	CO	15
TS	355	T-1A	US 6 IL 83 Torrence	River Oaks North Entr 6	Calumet City	CO	16
TS	490	T-1A	US 12 20 95th St	Kostner Ave	Oak Lawn	CO	17
TS	1043	T-1A	US 12 20 45 LaGrange Rd	63rd St	Hodgkins	CO	18
TS	1055	T-1A	US 12 20 45 LaGrange Rd	Countryside Plaza	Countryside	CO	19
TS	1060	T-1A	US 12 20 45 LaGrange Rd	Joliet Rd	Countryside	CO	20
TS	1095	T-1A	US 12 45 Mannheim Rd	IL 19 Irving Park Rd	Schiller Park	CO	21
TS	1100	T-1A	US 12 45 Mannheim Rd	IL 72 Higgins Rd	Rosemont	CO	22
TS	1102	T-1A	IL 72 Higgins Rd	Willow Creek Health Club	Rosemont	CO	23
TS	1125	T-1A	US 12 45 Mannheim Rd	Lawrence Ave	Schiller Park	CO	24
TS	1145	T-1A	US 12 45 Mannheim	Montrose Ave	Chicago	CO	25

			Rd				
TS	1190	T-1A	US 14 Northwest Hwy	Benton St	Palatine	CO	26
TS	1220	T-1A	US 14 Dempster St	Harlem Ave	Niles/Morton Grove	CO	27
TS	1235	T-1A	US 14 Northwest Hwy	Hicks Pl Lincoln St	Palatine	CO	28
TS	1295	T-1A	US 14 Dempster St	Shermer Rd	Niles/Morton Grove	CO	29
TS	1300	T-1A	US 14 Northwest Hwy	Smith Rd	Palatine	CO	30
TS	1310	T-1A	US 14 Northwest Hwy	Wilke Rd	Arlington Heights	CO	31
TS	1315	T-1A	US 14 Northwest Hwy	Plum Grove Rd	Palatine	CO	32
TS	1338	T-1A	I 294 Tollway Ramp	US 20 Lake St	Northlake	CO	33
TS	1340	T-1A	US 30 Lincoln Hwy	US 30 IL 83 Glenwood Dyer	Lynwood	CO	34
TS	1360	T-1A	US 30 Lincoln Hwy	Cottage Grove Ave	Chicago Heights	CO	35
TS	1370	T-1A	US 30 Lincoln Hwy	Ford Motor Plant	Chicago Heights	CO	36
TS	1405	T-1A	US 30 IL 83 Lincoln Hwy	Sauk Trail Rd	Lynwood	CO	37
TS	1415	T-1A	US 30 Lincoln Hwy	Torrence Ave	Sauk Village	CO	38
TS	1425	T-1A	US 30 Lincoln Hwy	Woodlawn Ave	Ford Heights	CO	39
TS	1437	T-1A	US 30 Lincoln Hwy	Access Rd Transportation Rd	Ford Heights	CO	40
TS	1500	T-1A	US 41 Lincoln Ave	Crawford Ave	Lincolnwood	CO	41
TS	1570	T-1A	US 41 Skokie Blvd	Niles Center Rd	Skokie	CO	42
TS	1610	T-1A	US 41 Lincoln Ave	Pratt Blvd	Lincolnwood	CO	43
TS	1613	T-1A	Crawford Ave	Pratt Blvd	Skokie	CO	44
TS	1640	T-1A	US 45 LaGrange Rd	131st St	Orland Park	CO	45
TS	1645	T-1A	US 45 LaGrange Rd	135th St	Orland Park	CO	46
TS	1650	T-1A	US 45 LaGrange Rd	143rd St	Orland Park	CO	47
TS	1651	T-1A	US 45 LaGrange Rd	142nd St	Orland Park	CO	48
TS	1655	T-1A	US 45 LaGrange Rd	147th St	Orland Park	CO	49
TS	1660	T-1A	US 45 LaGrange Rd	149th St	Orland Park	CO	50
TS	1665	T-1A	US 45 LaGrange Rd	151st St	Orland Park	CO	51
TS	1670	T-1A	US 45 LaGrange Rd	153rd St	Orland Park	CO	52
TS	1700	T-1A	US 45 LaGrange Rd	167th St	Orland Hills	CO	53
TS	1701	T-1A	US 45 LaGrange Rd	163rd St	Orland Hills	CO	54
TS	1705	T-1A	US 45 LaGrange Rd	Lakeview Plaza Dr	Orland Park	CO	55
TS	1710	T-1A	US 45 LaGrange Rd	Carl Sandburg High School	Palos Park/Orland pk	CO	56
TS	1720	T-1A	US 45 IL 21 Milwaukee Ave	Hintz Rd	Wheeling	CO	57
TS	1750	T-1A	US 45 LaGrange Rd	44th Pl	Orland Park	CO	58

TS	1755	T-1A	IL 1 Halsted St	IL 1 Cutoff Parkside Ave	Chicago Heights	CO	59
TS	1780	T-1A	IL 1 Chicago Ave	26th St	Chicago Heights	CO	60
TS	1815	T-1A	IL 1 Halsted St	163rd St	Harvey	CO	61
TS	1820	T-1A	IL 1 Halsted St	167th St	Harvey	CO	62
TS	1825	T-1A	IL 1 Halsted St	171st St	East Hazel Crest	CO	63
TS	1830	T-1A	IL 1 Halsted St	183rd St	Homewood	CO	64
TS	1835	T-1A	IL 1 Halsted St	Holbrook Rd	Glenwood	CO	65
TS	1840	T-1A	IL 1 Halsted St	187th	Homewood	CO	66
TS	1845	T-1A	IL 1 Halsted St Cut Off	Riegel Rd Chicago Rd	Chicago Heights	CO	67
TS	1850	T-1A	IL 1 Halsted St	Joe Orr Rd	Chicago Heights	CO	68
TS	1855	T-1A	IL 1 Halsted St	Ridge Rd	Homewood	CO	69
TS	1860	T-1A	IL 1 Chicago Ave	Sauk Trail	South Chicago Heights	CO	70
TS	1870	T-1A	IL 1 Halsted St	Vollmer Rd	Glenwood	CO	71
TS	1875	T-1A	IL 1 Halsted St	Maple Gate 3	Homewood	CO	72
TS	1880	T-1A	IL 1 Halsted St	175th St	Homewood	CO	73
TS	1885	T-1A	IL 1 Chicago Ave Vincennes Ave	Dixie Hwy	Chicago Heights	CO	74
TS	2120	T-1A	IL 43 Harlem Ave	25th St	North Riverside/Berwyn	CO	75
TS	2125	T-1A	IL 43 Harlem Ave	26th St	North Riverside	CO	76
TS	2200	T-1A	IL 43 Harlem Ave	99th St	Chicago Ridge	CO	77
TS	2205	T-1A	IL 43 Harlem Ave	103rd St	Chicago ridge	CO	78
TS	2230	T-1A	IL 43 Harlem Ave	131st St	Palos Heights	CO	79
TS	2280	T-1A	IL 43 Harlem Ave	22nd St Cermak Rd	Berwyn	CO	80
TS	2360	T-1A	IL 43 Harlem Ave	Lake St	Oak Park	CO	81
TS	2395	T-1A	IL 43 Harlem Ave	Riverside Dr Longcommon Rd	Riverside	CO	82
TS	2410	T-1A	IL 43 Harlem Ave	Touhy Ave	Niles/Chicago	CO	83
TS	2425	T-1A	IL 43 Waukegan Rd	Willow Rd	Northfield	CO	84
TS	2455	T-1A	IL 50 Cicero Ave	65th St	Chicago	CO	85
TS	2456	T-1A	IL 50 Cicero Ave	66th St	Chicago	CO	86
TS	2510	T-1A	IL 50 Cicero Ave	111th St	Alsip	CO	87
TS	2515	T-1A	IL 50 Cicero Ave	113th St State Bank of Alsip	Alsip	CO	88
TS	2540	T-1A	IL 50 Cicero Ave	88th Ave	Hometowne	CO	89
TS	2560	T-1A	IL 50 Cicero Ave	123rd St	Alsip	CO	90
TS	2565	T-1A	IL 50 Cicero Ave	127th St	Alsip	CO	91
TS	2635	T-1A	IL 50 Cicero Ave	Vollmer Rd	Matteson	CO	92
TS	2655	T-1A	IL 50 IL 83 Cicero Ave	Midlothian Turnpike	Crestwood	CO	93
TS	2725	T-1A	IL 58 Golf Rd	Barrington Rd	Hoffman Estates	CO	94

TS	2735	T-1A	IL 58 Dempster St	Bronx Ave	Skokie	CO	95
TS	2785	T-1A	IL 58 Golf Rd	6th Ave	Des Plaines	CO	96
TS	2805	T-1A	IL 58 Dempster St	Lockwood Ave	Skokie	CO	97
TS	2820	T-1A	IL 58 Golf Rd	Niles Center Rd	Skokie	CO	98
TS	3020	T-1A	IL 64 North Ave	25th Ave	Northlake	CO	99
TS	3025	T-1A	IL 64 North Ave	76th Ave Lathrop Ave	Elmwood Park	CO	100
TS	3035	T-1A	IL 64 North Ave	Cornell Ave 35th St	Melrose Park	CO	101
TS	3045	T-1A	IL 64 North Ave	Hawthorne Ave	Melrose Park	CO	102
TS	3050	T-1A	IL 64 North Ave	Indian Boundry Rd Ruby St	Melrose Park	CO	103
TS	3065	T-1A	IL 64 North Ave	Northwest Ave	Northlake	CO	104
TS	3067	T-1A	US 20	Railroad Ave	Northlake	CO	105
TS	3075	T-1A	IL 64 North Ave	Railroad Ave	Northlake	CO	106
TS	3085	T-1A	Il 64 North Ave	Thatcher Ave	Elmwood Park	CO	107
TS	3090	T-1A	IL 64 North Ave	Wolf Rd	Northlake	CO	108
TS	3100	T-1A	IL 68 Dundee Rd	Arlington Heights Rd	Arlington Heights	CO	109
TS	3140	T-1A	IL 68 Dundee Rd	Midway Rd	Northbrook	CO	110
TS	3185	T-1A	IL 68 Dundee Rd	Skokie Blvd	Northbrook	CO	111
TS	3215	T-1A	IL 72 Higgins Rd	Landmeier Rd	Elk Grove	CO	112
TS	3315	T-1A	IL 72 Higgins Rd	Elmhurst Rd	Elk Grove	CO	113
TS	3318	T-1A	Elmhurst Rd	Landmeier Rd	Elk Grove	CO	114
TS	3350	T-1A	IL 83 Elmhurst Rd	IL 83 Oakton St	Des Plaines	CO	115
TS	3360	T-1A	IL 83 Cal Sag Rd	104th Ave	Palos Park	CO	116
TS	3380	T-1A	IL 83 Torrence Ave	186th St	Lansing	CO	117
TS	3410	T-1A	IL 83 Busse Rd	Devon Ave	Elk Grove	CO	118
TS	3415	T-1A	IL 83 Sibley Blvd 147th St	Dixie Hwy	Harvey	CO	119
TS	3430	T-1A	IL 83 Elmhurst Rd	Hintz Rd	Wheeling	CO	120
TS	3450	T-1A	IL 83 Sibley Blvd 147th St	Kedzie Ave	Midlothian	CO	121
TS	3480	T-1A	IL 83 Torrence Ave	Michigan City Rd	Calumet City	CO	122
TS	3500	T-1A	IL 83 Elmhurst Rd	Randhurst Shopping Center	Mt Prospect	CO	123
TS	3515	T-1A	IL 83 Torrence Ave	Thornton Lansing Rd	Lansing	CO	124
TS	3570	T-1A	IL 171 Archer Ave	Willow Springs Rd	Willow Springs	CO	125
TS	3575	T-1A	IL 171 1st Ave East Ramps	47th St	Lyons	CO	126
TS	3580	T-1A	IL 394 Ford	Steger Rd	Crete	CO	127
TS	3590	T-1A	IL 171 1st Ave	31st St	North Riverside	CO	128
TS	3610	T-1A	IL 171 1st Ave	Chicago Ave	Maywood	CO	129
TS	3620	T-1A	IL 171 1st Ave	Forest Dr	North Riverside	CO	130

				Ridgewood Dr			
TS	3630	T-1A	IL 171 1st Ave	Lake St	Maywood	CO	131
TS	3635	T-1A	IL 171 1st Ave	13th St Madden Medical Center	Broadview	CO	132
TS	3640	T-1A	IL 171 1st Ave	Madison St	Maywood	CO	133
TS	3645	T-1A	IL 171 1st Ave	Maybrook Square	Maywood	CO	134
TS	3650	T-1A	IL 171 1st Ave	Roosevelt Rd	Forest Park	CO	135
TS	3656	T-1A	IL 171 1st Ave	Warren Ave	Maywood	CO	136
TS	3665	T-1A	IL 171 1st Ave	Van Buren St Comm Edison	Maywood	CO	137
TS	3670	T-1A	IL 171 1st Ave	Washington St	Maywood	CO	138
TS	3705	T-1A	17th Ave	Roosevelt Rd	Broadview	CO	139
TS	3725	T-1A	Roosevelt Rd	25th Ave	Broadview	CO	140
TS	3750	T-1A	26th St	North Riverside Plaza	North Riverside	CO	141
TS	3780	T-1A	39th St Pershing Rd	Central Ave	Stickney	CO	142
TS	3785	T-1A	39th St Pershing Rd	Laramie Ave	Stickney	CO	143
TS	3790	T-1A	39th St Pershing Rd	Oak Park Ave	Stickney	CO	144
TS	3795	T-1A	39th St Pershing Rd	Ridgeland Ave	Stickney	CO	145
TS	3800	T-1A	39th St Pershing Rd	Austin Blvd	Stickney / Cicero	CO	146
TS	3850	T-1A	55th St	Joliet Rd	McCook	CO	147
TS	3915	T-1A	87th St @ Kostner Ave	Kostner Ave	Hometowne	CO	148
TS	3936	T-1A	123rd St	Crawford Ave Pulaski Rd	Alsip	CO	149
TS	3960	T-1A	115th St	Crawford Ave Pulaski Rd	Alsip	CO	150
TS	3980	T-1A	127th St	Ashland Ave	Calumet City	CO	151
TS	3985	T-1A	127th St	Central Ave	Crestwood / Alsip	CO	152
TS	3990	T-1A	127th St	Crawford Ave Pulaski Rd	Alsip	CO	153
TS	4015	T-1A	127th St	Bishop St	Calumet City	CO	154
TS	4030	T-1A	135th St	Long Ave	Crestwood	CO	155
TS	4090	T-1A	Dixie Hwy	Governors Hwy 175th St	Homewood	CO	156
TS	4092	T-1A	Governors Hwy	Metra Station	Hazel Crest	CO	157
TS	4095	T-1A	183rd St	Crawford Ave Pulaski Rd	Hazel Crest	CO	158
TS	4110	T-1A	183rd St	Riegal Rd	Homewood	CO	159
TS	4170	T-1A	Barrington Rd	Bode Rd	Schaumburg	CO	160
TS	4175	T-1A	Barrington Rd	Hassel Rd	Hoffman Estates	CO	161
TS	4176	T-1A	Barrington Rd	Central Rd	South Barrington	CO	162
TS	4230	T-1A	Burnham Ave	170th St	Lansing	CO	163
TS	4235	T-1A	Burnham Ave	Ridge Rd	Lansing	CO	164
TS	4375	T-1A	Joe Orr Rd	Ashland Ave	Chicago Heights	CO	165

TS	4410	T-1A	Burnham Ave	152nd St	Calumet City	CO	166
TS	4415	T-1A	Burnham Ave	156th St	Calumet City	CO	167
TS	4425	T-1A	Burnham Ave	Michigan City Rd	Calumet City	CO	168
TS	4430	T-1A	Burnham Ave	154th St Pulaski Rd	Calumet City	CO	169
TS	4435	T-1A	IL 83 Sibley Blvd	Burnham Ave	Calumet City	CO	170
TS	4760	T-1A	Roosevelt Rd	Central Rd	Cicero	CO	171
TS	4890	T-1A	119th St	Crawford Ave Pulaski Rd	Alsip	CO	172
TS	4910	T-1A	Crawford Ave	Devon Ave	Lincolnwood	CO	173
TS	4930	T-1A	Crawford Ave	Vollmer Rd	Flossmoor	CO	174
TS	4975	T-1A	Des Plaines River Rd	Algonquin Rd	Des Plaines	CO	175
TS	4995	T-1A	Oakton St	DesPlaines River Rd	Des Plaines	CO	176
TS	5055	T-1A	Dixie Hwy	Holbrook Rd	Flossmoor	CO	177
TS	5060	T-1A	Dixie Hwy	Joe Orr Rd	Chicago Heights	CO	178
TS	5067	T-1A	Joliet Rd	Circuit City Quarry Mall Ent	Countryside	CO	179
TS	5070	T-1A	Plainfield Rd	East Ave	McCook	CO	180
TS	5080	T-1A	Elmhurst Rd	Devon Ave	Elk Grove	CO	181
TS	5095	T-1A	Forest Preserve Dr	Montrose Ave	Chicago	CO	182
TS	5100	T-1A	Forest Preserve Dr	Oak Park Ave	Chicago	CO	183
TS	5105	T-1A	Flossmoor Rd	Western Ave	Flossmoor	CO	184
TS	5125	T-1A	Glenwood Dyer Rd	Cottage Grove Rd	Glenwood	CO	185
TS	5180	T-1A	Governors Hwy	Flossmoor Rd	Flossmoor	CO	186
TS	5200	T-1A	Governors Hwy	Vollmer Rd	Flossmoor	CO	187
TS	5260	T-1A	Gross Point Rd	Touhy Ave	Niles	CO	188
TS	5330	T-1A	Howard St	Gross Point Rd Menard	Niles	CO	189
TS	5340	T-1A	McCormick Blvd	Howard St	Skokie	CO	190
TS	5355	T-1A	Joliet Rd	Brainard Ave	Countryside	CO	191
TS	5360	T-1A	Joliet Rd	Lawndale Ave	McCook	CO	192
TS	5375	T-1A	Joliet Rd	Universal Oil Products Ent	McCook	CO	193
TS	5485	T-1A	McCormick Blvd	Oakton St	Skokie	CO	194
TS	5495	T-1A	IL 21 Milwaukee Ave	IL 43 Waukegan Rd	Niles	CO	195
TS	5695	T-1A	Ridge Rd	Ashland Ave Riegel Rd	Homewood	CO	196
TS	5710	T-1A	Riegel Rd	Holbrook Rd	Homewood	CO	197
TS	5730	T-1A	Roosevelt Rd	Austin Ave	Cicero	CO	198
TS	5745	T-1A	Roosevelt Rd	Mayfield Ave	Cicero	CO	199
TS	5755	T-1A	Sauk Trail	State Rd	South Chicago Heights	CO	200

TS	5760	T-1A	Sauk Trail	Torrence Ave	Sauk Village	CO	201
TS	5820	T-1A	Torrence Ave	Dolton Ave State Rd	Calumet City	CO	202
TS	5825	T-1A	Touhy Ave	Crawford Ave	Lincolnwood	CO	203
TS	5870	T-1A	Western Ave	119th St	Blue Island	CO	204
TS	5895	T-1A	Western Ave	Vollmer Rd	Flossmoor	CO	205
TS	5900	T-1A	Western Ave	Illinois St 16th St	Park Forest	CO	206
TS	5933	T-1A	Willow Rd	Westleigh Dr Founders Dr	Northbrook	CO	207
TS	5965	T-1A	171st St	Wood St	Hazel Crest	CO	208
TS	7417	T-1A	US 45 LaGrange Rd	183rd St	Tinley Park	CO	209
TS	9085	T-1A	IL 72 Higgins Rd	Devon Ave	Rosemont	CO	210
TS	9090	T-1A	IL 72 Higgins Rd	Scott St	Rosemont	CO	211
TS	9155	T-1A	IL 83 147th St	Cleveland Ave	Posen	CO	212
TS	9160	T-1A	IL 83 Sibley Blvd 147th St	Harrison St	Posen	CO	213
TS	9165	T-1A	IL 83	Sacramento Ave	Posen	CO	214
TS	9295	T-1A	Western Ave	26th St	Park Forest	CO	215
TS	9297	T-1A	Western Ave	Norwood Square Shopping Cntr	Park Forest	CO	216
TS	9300	T-1A	Western Ave	Beacon Blvd	Chicago Heights	CO	217
TS	10595	T-1A	IL 43 Waukegan Rd	Kraft Food Three Lakes	Glenview	CO	218
TS	11086	T-1A	55th St	Sergo Dr	Countryside	CO	219
TS	11175	T-1A	US 12 45 Mannheim Rd	Devon Ave Zemke Rd	Rosemont	CO	220
TS	11350	T-1A	US 6 IL 83 Torrence Ave	Landings Shopping Center	Lansing	CO	221
TS	11355	T-1A	Margaret St	Williams St	Thornton	CO	222
TS	11356	T-1A	Margaret St	Schwab St	Thornton	CO	223
TS	11360	T-1A	William St	Eleanor St	Thornton	CO	224
TS	11715	T-1A	Western Ave	Sauk Trail	Park Forest	CO	225
TS	11716	T-1A	Western Ave	Main St in Park Forest	Park Forest	CO	226
TS	11725	T-1A	Dixie Hwy	Flossmoor Rd Cambridge Dr	Flossmoor	CO	227
TS	11745	T-1A	IL 394 Bishop Ford Frwy	Sauk Trail	Sauk Village	CO	228
TS	11805	T-1A	IL 171 1st Ave	47th St W Ramp	McCook	CO	229
TS	11810	T-1A	IL 171 1st Ave	Ramps B 1	McCook	CO	230
TS	11865	T-1A	N Main St Vincennes Ave	Glenwood Dyer Rd	Glenwood	CO	231
TS	11870	T-1A	IL 72 Higgins Rd	Lee Ramp Trammel Crow	Des Plaines	CO	232
TS	11965	T-1A	IL 64 North Ave	Polk Plaza Shopping Center	Melrose Park	CO	233

TS	11985	T-1A	US 14 Northwest Hwy	Hicks Rd N Jct	Palatine	CO	234
TS	12000	T-1A	US 6 IL 83 Torrence Ave	173rd St Bernice Rd	Lansing	CO	235
TS	12115	T-1A	IL 1 Halsted	Park Place Plaza	Homewood	CO	236
TS	13035	T-1A	US 12 45 Lee St	US 14 Miner St Ellenwood St	Des Plaines	CO	237
TS	13890	T-1A	47th St	Willow Springs Rd	LaGrange	CO	238
TS	13940	T-1A	IL 83 Torrence Ave	178th St	Lansing	CO	239
TS	13942	T-1A	US 6 IL 83 Torrence Ave	I 80 94	Lansing	CO	240
TS	14155	T-1A	US 34 Ogden Ave	IL 171 1st Ave	Lyons	CO	241
TS	14157	T-1A	US 34 Ogden Ave	Lawndale Ave	Lyons	CO	242
TS	14160	T-1A	IL 171 1st Ave	Plainfield Rd	Lyons	CO	243
TS	14165	T-1A	IL 171 1st Ave	44th St	Lyons	CO	244
TS	14170	T-1A	US 34 Ogden Ave	Plainfield Rd	Lyons	CO	245
TS	14175	T-1A	US 34 Ogden Ave	Custer Ave	Brookfield	CO	246
TS	14190	T-1A	5th Ave	Washington Ave	Maywood	CO	247
TS	14195	T-1A	5th Ave	Madison Ave	Maywood	CO	248
TS	14200	T-1A	5th Ave	Lake St	Maywood	CO	249
TS	14480	T-1A	IL 43 Waukegan Rd	Westleigh Dr Christian Heritage	Northbrook	CO	250
TS	15110	T-1A	IL 38 Roosevelt Rd	Westchester Blvd	Westchester	CO	251
TS	15115	T-1A	22nd St Cermak Rd	Mayfair Ave	Westchester	CO	252
TS	2070	T-1A	IL 38 Roosevelt Rd	Hamilton St Harrison St	Hillside	CO	253
TS	20945	T-1A	US 45 96th Ave	179th St	Tinley Park	CO	254
TS	20955	T-1A	US 6 IL 83 Torrence Ave	166th St Fieldcrest Dr	Lansing	CO	255
TS	21090	T-1A	Glenwood Dyer Rd	Stoney Island Ave	Lynwood	CO	256
TS	21130	T-1A	Barrington Rd	Old Church Rd	Streamwood	CO	257
TS	21145	T-1A	Elmhurst Rd	Greenleaf Ave	Elk Grove	CO	258
TS	21150	T-1A	Elmhurst Rd	Pratt Ave	Elk Grove	CO	259
TS	21185	T-1A	IL 83 Torrence Ave	Glenwood Lansing Rd	Lansing	CO	260
TS	21275	T-1A	Willow Rd	Kraft Food Three Lakes Dr	Northbrook	CO	261
TS	21340	T-1A	IL 83 Torrence Ave	176th St	Lansing	CO	262
TS	21605	T-1A	US 30 Lincoln Hwy	Ellis St	Ford Heights	CO	263
TS	21620	T-1A	Meacham Rd	Motorola S Dr Thoreau Dr	Schaumburg	CO	264
TS	21709	T-1A	IL 19 Irving Park Rd	Elgin O'Hare E Frontage	Schaumburg	CO	265
TS	21710	T-1A	IL 19 Irving Park Rd	Elgin O'Hare W Frontage	Hoffman Estates	CO	266
TS	21730	T-1A	Elgin O'Hare W	Meacham Rd	Itasca	CO	267

			Frontage Rd				
TS	21731	T-1A	Elgin O'Hare W Frontage Rd	Meacham Rd Medinah Ed	Itasca/Elk Grove	CO	268
TS	21770	T-1A	Meacham Rd	Tower Rd McConnor Pkwy	Schaumburg	CO	269
TS	21850	T-1A	IL 64 North Ave	WalMart Ent Hillside	Northlake	CO	270
TS	22060	T-1A	US 45 LaGrange Rd	171st St	Orland Hills	CO	271
TS	545	T-1A	IL 83	3rd Ave	Elmhurst/Bensenville	DU	272
TS	590	T-1A	IL 83	Foster Ave	Bensenville	DU	273
TS	595	T-1A	IL 83	Grove Ave Sherwood Dr	Bensenville	DU	274
TS	600	T-1A	IL 83	Hillside Dr	Bensenville	DU	275
TS	610	T-1A	IL 83	Mark St	Bensenville	DU	276
TS	650	T-1A	IL 83	Thorndale Ave	Bensenville	DU	277
TS	660	T-1A	IL 53 Rohlwing Rd	Thorndale Ave	Itasca	DU	278
TS	5975	T-1A	I 55 North Frontage Rd	Cass Ave	Darien	DU	279
TS	6000	T-1A	I 290 Eisenhower Expy E Ramp	Thorndale Ave	Itasca	DU	280
TS	6005	T-1A	I 290 Eisenhower Expy W Ramp	Thorndale Ave	Itasca	DU	281
TS	6047	T-1A	US 34 Ogden Ave	75th St	Aurora	DU	282
TS	6048	T-1A	US 34 Ogden Ave	Long Grove Rd	Aurora	DU	283
TS	6051	T-1A	US 34 Ogden Ave	Frontenac Rd	Aurora	DU	284
TS	6089	T-1A	IL 59	McCoy Fox River Commons	Naperville	DU	285
TS	6090	T-1A	US 34 Ogden Ave	IL 59	Aurora	DU	286
TS	6157	T-1A	IL 53 Rohlwing Rd	West Thorndale Ave	Itasca	DU	287
TS	6158	T-1A	IL 53 Rohlwing Rd	Norwood Ave	Itasca	DU	288
TS	6175	T-1A	IL 38 Roosevelt Rd	Fabyan Pkwy Washington St	West Chicago	DU	289
TS	6185	T-1A	IL 38 Roosevelt Rd	Kress Rd	West Chicago	DU	290
TS	6380	T-1A	IL 59	North Aurora Rd	Naperville	DU	291
TS	9022	T-1A	IL 38 Roosevelt Rd	Kautz Rd	West Chicago	DU	292
TS	9450	T-1A	IL 59	Diel Rd	Naperville	DU	293
TS	9455	T-1A	IL 59	Bruce Dr	Naperville	DU	294
TS	9470	T-1A	IL 59	I 88 South Ramp	Naperville	DU	295
TS	9475	T-1A	IL 59	I 88 North Ramp	Naperville	DU	296
TS	11085	T-1A	IL 59	Ferry Rd	Naperville	DU	297
TS	12045	T-1A	IL 19 Irving Park Rd	York Rd	Bensenville	DU	298
TS	12065	T-1A	IL 19 Irving Park Rd	Church Rd	Bensenville	DU	299
TS	12140	T-1A	IL 59	Liberty St Jefferson Ave	Naperville	DU	300

TS	12310	T-1A	IL 59	Aurora Market Place S C	Aurora	DU	301
TS	12360	T-1A	US 34 Ogden Ave	Trade St Aurora Market Plaza	Aurora	DU	302
TS	20360	T-1A	IL 59	Meridian Rd	Naperville/Aurora	DU	303
TS	20620	T-1A	IL 59	New York Ave Aurora Rd	Aurora	DU	304
TS	20635	T-1A	IL 59	Fox Valley SC N Ent	Aurora	DU	305
TS	20910	T-1A	US 34 Ogden Ave	Fox River Commons SC Ent	Aurora/Naperville	DU	306
TS	21139	T-1A	IL 59	Vantage Shop	Aurora	DU	307
TS	21930	T-1A	Aurora Ave	Westridge Ct Naper W Pl	Naperville	DU	308
TS	665	T-1A	I 90 NW Tollway	IL 25	Elgin	KA	309
TS	810	T-1A	IL 31	Tollgate Rd Airport Rd	Elgin	KA	310
TS	820	T-1A	IL 31	Davis River	Elgin	KA	311
TS	862	T-1A	US 30	Dugan Rd	Sugar Grove	KA	312
TS	1000	T-1A	IL 31	IL 72	West Dundee	KA	313
TS	12091	T-1A	IL 25 Dunham Rd	IL 25 Stearns Rd	St Charles Township	KA	314
TS	12092	T-1A	IL 25 Stearns Rd	Gilbert St	St Charles Township	KA	315
TS	12093	T-1A	IL 25 Stearns Rd	Stearns Rd	St Charles Township	KA	316
TS	4705	T-1A	IL 83 Main St	Lake St (Antioch)	Antioch	LA	317
TS	4710	T-1A	IL 83 Main St	North Ave (Antioch)	Antioch	LA	318
TS	4712	T-1A	IL 83	Orchard Ave	Antioch	LA	319
TS	6705	T-1A	IL 21 Milwaukee Ave	IL 132 Grand Ave	Gurnee	LA	320
TS	6805	T-1A	IL 43 Waukegan Rd	IL 176	Kildeer	LA	321
TS	6917	T-1A	IL 176	Hawley West Junction	Mundelin/Ivanhoe	LA	322
TS	6945	T-1A	IL 83	IL 132	Lake Villa	LA	323
TS	6948	T-1A	IL 83	Monaville Rd	Lake Villa	LA	324
TS	6949	T-1A	IL 83	Engle Dr Walmart	Lake Villa	LA	325
TS	6950	T-1A	IL 83	IL 173	Antioch	LA	326
TS	6970	T-1A	IL 83	Grass Lake Rd	Antioch	LA	327
TS	6982	T-1A	IL 83	Peterson Rd	Grayslake	LA	328
TS	7030	T-1A	IL 131 Green Bay Rd	Wadsworth Rd	Beach Park	LA	329
TS	7065	T-1A	IL 132 Grand Ave	O'Plaine Rd	Gurnee	LA	330
TS	7142	T-1A	IL 176	Gilmer Rd	Wauconda	LA	331
TS	12275	T-1A	US 41	IL 176 East Ramp	Lake Bluff	LA	332
TS	12280	T-1A	US 41	IL 176 West Ramp	Lake Bluff	LA	333
TS	12317	T-1A	IL 83	Brighton Lane	Grayslake	LA	334
TS	13742	T-1A	IL 120 Belvedere Rd	Lake St	Grayslake	LA	335

TS	21637	T-1A	IL 83	Petite Lake Rd	Lake Villa	LA	336
TS	21991	T-1A	IL 83	Home Depot Millstone Dr	Round Lake Beach	LA	337
TS	21992	T-1A	IL 83	Hook Dr Old Rollins Rd	Round Lake Beach	LA	338
TS	22205	T-1A	Glimer Rd	Midlothian Rd	Hawthorn Woods	LA	339
TS	7236	T-1A	US 14	Lake Ave	Woodstock	MC	340
TS	7237	T-1A	US 14	West Lake Shore Ave	Woodstock	MC	341
TS	7289	T-1A	IL 31	Shamrock Ln	McHenry	MC	342
TS	7290	T-1A	IL 31	IL 120 Elm E Jct	McHenry	MC	343
TS	7300	T-1A	IL 31	Bull Valley Rd	McHenry	MC	344
TS	11885	T-1A	IL 31	Pearl St	McHenry	MC	345
TS	11920	T-1A	IL 120	Green St	McHenry	MC	346
TS	22155	T-1A	IL 31	James Rakow Rd	Crystal Lake	MC	347
TS	22156	T-1A	IL 31	Virginia Ave	Lake In The Hills	MC	348
TS	21134	T-1A	US 30 Lincoln Hwy	Retail Dr Vancina Ln	New Lenox	WI	349

Location #		**Type**	**Main Route**	**Cross Street**	**City**	**Co.**	**Qty**
TS	1668	T-1B	US 45 LaGrange Rd	156th St Lowes Shopping Center	Orland Park	CO	1
TS	3320	T-1B	IL 72 Higgins Rd	Gabrieski Dr	Rosemont	CO	2
TS	4040	T-1B	135th St	Central Ave	Crestwood	CO	3
TS	14183	T-1B	5th Ave	Main St St Charles	Maywood	CO	4
TS	21500	T-1B	IL 83 Glenwood Dyer Rd	Burnham Ave	Lynwood	CO	5
TS	776	T-1B	US 20	IL 47 72 South	Starks	KA	6
TS	777	T-1B	US 20	IL 47 72 North	Starks	KA	7
TS	7233	T-1B	US 14	Ridgefield Rd	Crystal Lake	MC	8
TS	7239	T-1B	US 14	Doty Rd	Woodstock	MC	9
TS	7618	T-1B	IL 394	Richton Rd	Crete	WI	10

Location #		Type	Main Route	Cross Street	City	Co.	Qty
TSFL	915	T-2A	IL 50 Cicero Ave	Stunkel Rd	University Park	WI	1

Location #		Type	Main Route	Cross Street	City	Co.	Qty
TSFL	121	T-2B	IL 25 Sterns Rd NB	S of CCP RR Between Stearns Rd and Gilbert	St Charles	KA	1
TSFL	122	T-2B	IL 25 Sterns Rd SB	N of CCP RR Between Stearns Rd and Gilbert	St Charles	KA	2
TSFL	530	T-2B	Ashland Ave Wood St	140th St/RR Underpass NB & S	Dixmoor	CO	3
TSFL	531	T-2B	140th	Ashland Ave SB	Dixmoor	CO	4
TSFL	3972	T-2B	119th St EB Before RR Tracks	Page St	Calumet	CO	5
TSFL	3973	T-2B	119th St EB Past RR Tracks	Page St	Calumet	CO	6
TSFL	7239	T-2B	US 14 EB	Doty Rd	Woodstock	MC	7
TSFL	7240	T-2B	US 14 WB	Doty Rd	Woodstock	MC	8

COARSE AGGREGATE QUALITY (BDE)
Effective: July 1, 2015

Revise Article 1004.01(b) of the Standard Specifications to read:

"(b) Quality. The coarse aggregate shall be according to the quality standards listed in the following table.

COARSE AGGREGATE QUALITY				
QUALITY TEST	CLASS			
	A	B	C	D
Na_2SO_4 Soundness 5 Cycle, ITP 104 [1/], % Loss max.	15	15	20	25 [2/]
Los Angeles Abrasion, ITP 96 [11/], % Loss max.	40 [3/]	40 [4/]	40 [5/]	45
Minus No. 200 (75 µm) Sieve Material, ITP 11	1.0 [6/]	---	2.5 [7/]	---
Deleterious Materials [10/]				
Shale, % max.	1.0	2.0	4.0 [8/]	---
Clay Lumps, % max.	0.25	0.5	0.5 [8/]	---
Coal & Lignite, % max.	0.25	---	---	---
Soft & Unsound Fragments, % max.	4.0	6.0	8.0 [8/]	---
Other Deleterious, % max.	4.0 [9/]	2.0	2.0 [8/]	---
Total Deleterious, % max.	5.0	6.0	10.0 [8/]	---
Oil-Stained Aggregate [10/], % max	5.0	---	---	

1/ Does not apply to crushed concrete.

2/ For aggregate surface course and aggregate shoulders, the maximum percent loss shall be 30.

3/ For portland cement concrete, the maximum percent loss shall be 45.

4/ Does not apply to crushed slag or crushed steel slag.

5/ For hot-mix asphalt (HMA) binder mixtures, except when used as surface course, the maximum percent loss shall be 45.

6/ For crushed aggregate, if the material finer than the No. 200 (75 µm) sieve consists of the dust from fracture, essentially free from clay or silt, this percentage may be increased to 2.5.

7/ Does not apply to aggregates for HMA binder mixtures.

8/ Does not apply to Class A seal and cover coats.

9/ Includes deleterious chert. In gravel and crushed gravel aggregate, deleterious chert shall be the lightweight fraction separated in a 2.35 heavy media separation. In crushed stone aggregate, deleterious chert shall be the lightweight fraction separated in a 2.55 heavy media separation. Tests shall be run according to ITP 113.

10/ Test shall be run according to ITP 203.

11/ Does not apply to crushed slag.

All varieties of chert contained in gravel coarse aggregate for portland cement concrete, whether crushed or uncrushed, pure or impure, and irrespective of color, will be classed as chert and shall not be present in the total aggregate in excess of 25 percent by weight (mass).

Aggregates used in Class BS concrete (except when poured on subgrade), Class PS concrete, and Class PC concrete (bridge superstructure products only, excluding the approach slab) shall contain no more than two percent by weight (mass) of deleterious materials. Deleterious materials shall include substances whose disintegration is accompanied by an increase in volume which may cause spalling of the concrete."

COATED GALVANIZED STEEL CONDUIT (BDE)
Effective: January 1, 2013 Revised: January 1, 2015

Revise Article 811.03(b) of the Standard Specifications to read:

"(b) Coated Galvanized Steel Conduit. In addition to the methods described in Article 810.05(a) the following methods shall be observed when installing coated conduit.

Coated conduit pipe vise jaw adapters shall be used when the conduit is being clamped to avoid damaging the coating.

Coated conduit shall be cut with a roller cutter or by other means approved by the conduit manufacturer.

After any cutting or threading operations are completed, the bare steel shall be touched up with the conduit manufacturer's touch up compound."

COILABLE NONMETALLIC CONDUIT (BDE)
Effective: August 1, 2014 Revised: January 1, 2015

Revise Article 1088.01(c) of the Standard Specifications to read:

"(c) Coilable Nonmetallic Conduit. The conduit shall be a high density polyethylene duct which is intended for underground use can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties or performance. The conduit and its manufacture shall be according to UL 651A for Schedule 40 conduit, except Schedule 80 shall be used under pavement, stabilized shoulder, paved median, paved driveway, curb and/or gutter and sidewalk.

Performance Tests. Testing procedures and test results shall meet the requirements of UL 651A. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the conduit."

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)
Effective: June 1, 2010 Revised: November 1, 2014

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/cleandiesel/verification/verif-list.htm), or verified by the California Air Resources Board (CARB) (http://www.arb.ca.gov/diesel/verdev/vt/cvt.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.

CONTRACT CLAIMS (BDE)
Effective: April 1, 2014

Revise the first paragraph of Article 109.09(a) of the Standard Specifications to read:

"(a) Submission of Claim. All claims filed by the Contractor shall be in writing and in sufficient detail to enable the Department to ascertain the basis and amount of the claim. As a minimum, the following information must accompany each claim submitted."

Revise Article 109.09(e) of the Standard Specifications to read:

"(e) Procedure. The Department provides two administrative levels for claims review.

Level I Engineer of Construction
Level II Chief Engineer/Director of Highways or Designee

(1) Level I. All claims shall first be submitted at Level I. Two copies each of the claim and supporting documentation shall be submitted simultaneously to the District and the Engineer of Construction. The Engineer of Construction, in consultation with the District, will consider all information submitted with the claim and render a decision on the claim within 90 days after receipt by the Engineer of Construction. Claims not conforming to this Article will be returned without consideration. The Engineer of Construction may schedule a claim presentation meeting if in the Engineer of Construction's judgment such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. If a Level I decision is not rendered within 90 days of receipt of the claim, or if the Contractor disputes the decision, an appeal to Level II may be made by the Contractor.

(2) Level II. An appeal to Level II shall be made in writing to the Engineer of Construction within 45 days after the date of the Level I decision. Review of the claim at Level II shall be conducted as a full evaluation of the claim. A claim presentation meeting may be scheduled if the Chief Engineer/Director of Highways determines that such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. A Level II final decision will be rendered within 90 days of receipt of the written request for appeal.

Full compliance by the Contractor with the provisions specified in this Article is a contractual condition precedent to the Contractor's right to seek relief in the Court of Claims. The Director's written decision shall be the final administrative action of the Department. Unless the Contractor files a claim for adjudication by the Court of Claims within 60 days after the date of the written decision, the failure to file shall constitute a release and waiver of the claim."

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)
Effective: September 1, 2000 Revised: January 2, 2015

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, which may include, but is not limited to:
>
> (a) Withholding progress payments;
>
> (b) Assessing sanctions;
>
> (c) Liquidated damages; and/or
>
> (d) Disqualifying the Contractor from future bidding as non-responsible.

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. The 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 **5.00%** 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 for 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 shall 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 website 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; the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract.

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 that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, 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 documents 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 document 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. In accordance with Section 6 of the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

(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 or 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 for the determination.

(c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the 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 or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. 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 documentation and 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 consideration, 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 is 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 of 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. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement.

(a) NO AMENDMENT. 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) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. 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. 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. 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.

(c) SUBCONTRACT. The Contractor must provide DBE subcontracts to IDOT upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.

(d) ALTERNATIVE WORK METHODS. 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 reasonable 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) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a). Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE listed in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;

(3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law.

(6) You have determined that the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;

(8) The listed DBE is ineligible to receive DBE credit for the type of work required;

(9) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;

(10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

(f) PAYMENT RECORDS. 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 (h) of this part.

(g) ENFORCEMENT. 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.

(h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor my 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.

EQUAL EMPLOYMENT OPPORTUNITY (BDE)
Effective: April 1, 2015

FEDERAL AID CONTRACTS. Revise the following section of Check Sheet #1 of the Recurring Special Provisions to read:

"EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act, or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

(1) That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

(2) That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (according to the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

(3) That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status or an unfavorable discharge from military service.

(4) That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.

(5) That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

(6) That it will permit access to all relevant books, records, accounts, and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

(7) That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations."

STATE CONTRACTS. Revise Section II of Check Sheet #5 of the Recurring Special Provisions to read:

"II. EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

1. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

2. That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (according to the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

3. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service.

4. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.

5. That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

6. That it will permit access to all relevant books, records, accounts and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

7. That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations."

PRECAST CONCRETE HANDHOLE (BDE)
Effective: August 1, 2014

Revise the third paragraph of Article 814.03 of the Standard Specifications to read:

"Handholes shall be constructed as shown on the plans and shall be cast-in-place, composite concrete, or precast units. Heavy duty handholes shall be either cast-in-place or precast units."

Add the following to Article 814.03 of the Standard Specifications:

"(c) Precast Concrete. Precast concrete handholes shall be fabricated according to Article 1042.17. Where a handhole is contiguous to a sidewalk, preformed joint filler of 1/2 inch (13 mm) thickness shall be placed between the handhole and the sidewalk."

Add the following to Section1042 of the Standard Specifications:

"**1042.17 Precast Concrete Handholes.** Precast concrete handholes shall be according to Articles 1042.03(a)(c)(d)(e)."

PROGRESS PAYMENTS (BDE)
Effective: November 2, 2013

Revise Article 109.07(a) of the Standard Specifications to read:

"(a) Progress Payments. At least once each month, the Engineer will make a written estimate of the quantity of work performed in accordance with the contract, and the value thereof at the contract unit prices. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than $1000.00 will be approved for payment other than the final payment.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics' Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610), progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved."

RIGID METAL CONDUIT (BDE)
Effective: August 1, 2014

Add the following to Article 1088.01(a) of the Standard Specifications:

"(6) Stainless Steel Conduit. The conduit shall be Type 304 or Type 316 stainless steel, shall be manufactured according to UL Standard 6A, and shall meet ANSI Standard C80.1. Conduit fittings shall be Type 304 or Type 316 stainless steel and shall be manufactured according to UL Standard 514B.

All conduit supports, straps, clamps. And other attachments shall be Type 304 or Type 316 stainless steel. Attachment hardware shall be stainless steel according to Article 1006.31."

TRACKING THE USE OF PESTICIDES (BDE)
Effective: August 1, 2012

Add the following paragraph after the first paragraph of Article 107.23 of the Standard Specifications:

"Within 48 hours of the application of pesticides, including but not limited to herbicides, insecticides, algaecides, and fungicides, the Contractor shall complete and return to the Engineer, Operations form "OPER 2720"."

WEEKLY DBE TRUCKING REPORTS (BDE)
Effective: June 2, 2012 Revised: April 2, 2015

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Engineer on Department form "SBE 723" within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports 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.

VETERAN BUSINESS PROGRAM
Effective: November 6, 2014

STATE OBLIGATION. This special provision will be used by the Department to satisfy the requirements of the Illinois Procurement Code, 30 ILCS 500/45-57. It is the goal of the State to promote and encourage the continued economic development of small businesses owned and controlled by qualified veterans and that qualified Service-Disabled Veteran-Owned Small Businesses (SDVOSB) and Veteran-Owned Small Businesses (VOSB) participate in the State's procurement process as both prime contractors and subcontractors.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific Veteran Small Business participation goal of **0.00%** based on the availability of CMS certified veteran-owned and service-disabled veteran-owned small business (VOSB/SDVOSB) vendors to perform or provide the anticipated services and/or supplies required by this contract.

The Veteran Small Business participation goal is applicable to all bids. In addition to the other award criteria established for this contract, the Department will award this contract to a Vendor that meets the goal or makes good faith efforts to meet the goal. This goal is also applicable to change orders and allowances within the scope of work provided by the certified VOSB/SDVOSB vendor. If Vendor is a CMS certified VOSB/SDVOSB vendor, the entire goal is met and no subcontracting with a CMS certified VOSB/SDVOSB vendor is required; however, Vendor must submit a Utilization Plan indicating that the goal will be met by self-performance.

VETERAN SMALL BUSINESS CERTIFIED VENDOR LOCATOR REFERENCES. Vendors may consult CMS' Veteran Small Business Vendor Directory at www.sell2.illinois.gov/cms/business as well as the directories of other certifying agencies, but firms must be certified with CMS as VOSB/SDVOSB vendors at the time of bid/offer (see Title 44 Illinois Administrative Code Sec. 20.530).

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply with this special provision will render the bid nonresponsive or not responsible.

At the time of the bid, Vendor, or Vendor's proposed subcontractor, must be certified with CMS as a VOSB or SDVOSB.

Following are guidelines for Vendor's completion of the Utilization Plan.

(a) The bidder shall submit a Veteran Business Program (VBP) Utilization Plan. The format for the VBP Utilization Plan is included in this special provision.

(b) Vendor should include any additional information that will add clarity to Vendor's proposed utilization of certified Veteran Small Business vendors to meet the targeted goal. The Utilization Plan must demonstrate that Vendor has either:

(1) met the entire contract goal;

(2) made good faith efforts towards meeting the entire goal; or

(3) made good faith efforts towards meeting a portion of the goal. Any submission of good faith efforts by Vendor shall be considered as a request for a full or partial waiver.

(c) If the bidder is a joint venture comprised of Veteran Business Enterprises (VBE) companies and non-VBE companies, the plan must also include:

(1) A clear identification of the portion of work to be performed by the VOSB/SDVOSB partner(s); and

(2) An agreement between a vendor and a certified VOSB/SDVOSB vendor in which a certified VOSB/SDVOSB vendor promises not to provide subcontracting or pricing quotations to other vendors is prohibited. The Department may request additional information to demonstrate compliance. Vendor agrees to cooperate promptly with the Department in submitting to interviews, allowing entry to places of business, providing further documentation, and to soliciting the cooperation of a proposed certified VOSB/SDVOSB vendor. Failure to cooperate by Vendor and certified VOSB/SDVOSB vendor may render the bidder nonresponsive or not responsible. The contract will not be awarded to Vendor unless Vendor's Utilization Plan is approved.

GOOD FAITH EFFORT PROCEDURES. Vendor must submit a Utilization Plans and Letters of Intent that meet or exceed the published goal. If Vendor cannot meet the stated goal, Vendor must document and explain within the Utilization Plan the good faith efforts it undertook to meet the goal. Utilization Plans are due at the time of bid. Vendors may not be permitted to correct goal deficiencies after bid due dates. The Department will consider the quality, quantity, and intensity of Vendor's efforts but if the Department determines that a Vendor did not demonstrate good faith efforts towards meeting the goal on the bid, the bid may be deemed nonresponsive or not responsible.

The Utilization Plan contains a checklist of actions that the Department will consider as evidence of Vendor's good faith efforts to meet the goal. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases.

(a) In evaluating Vendor's good faith efforts, the Department may consider whether the ability of other bidders to meet the contract goal suggests that good faith efforts could have resulted in Vendor meeting the goal.

(b) If the Department determines that Vendor has made good faith efforts to meet the goal, the Department may award the contract provided that Vendor is otherwise eligible for award.

(c) If the Department determines that good faith efforts have not been met, the bidder may be determined to be nonresponsive or not responsible.

CALCULATING CERTIFIED VOSB/SDVOSB VENDOR PARTICIPATION. The Utilization Plan documents work anticipated to be performed by all certified VOSB/SDVOSB vendors 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 the VOSB/SDVOSB vendors. Applicable guidelines for counting payments attributable to contract goals are listed below:

(a) A Vendor shall count towards the goal only expenditures to firms that perform a commercially useful function in the work of the contract.

(1) A firm is considered to perform a commercially useful function when it is responsible for execution of a distinct element of the work of a contract and carries out its responsibilities by actually performing, managing, and supervising the work involved. The certified VOSB/SDVOSB vendor must also be responsible, with respect to materials or supplies used on the contract, for negotiating price, determining quality and quantity, ordering the materials or supplies, and installing the materials (where applicable) and paying for the material or supplies. To determine whether a firm is performing a commercially useful function, the Department shall evaluate the amount of work subcontracted, whether the amount the firm is to be paid under the contract is commensurate with the work it is actually performing and the credit claimed for its performance of the work, industry practices, and other relevant factors.

(2) A certified VOSB/SDVOSB vendor does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction or contract through which funds are passed through in order to obtain certified VOSB/SDVOSB vendor participation. In determining whether a certified VOSB/SDVOSB vendor is such an extra participant, the Department shall examine similar transactions, particularly those in which certified VOSB/SDVOSB vendors do not participate, and industry practices.

(b) The value of the work actually performed or goods/equipment provided by the certified VOSB/SDVOSB vendor shall be counted towards the goal. The entire amount of that portion of the contract that is performed by the certified VOSB/SDVOSB vendor, including supplies purchased or equipment leased by the certified VOSB/SDVOSB vendor shall be counted, except supplies purchased and equipment rented from the Prime Vendor submitting this bid.

(c) A vendor shall count the portion of the total dollar value of the Veteran Small Business contract equal to the distinct, clearly defined portion of the work of the contract that the certified VOSB/SDVOSB vendor performs toward the goal. A vendor shall also count the dollar value of work subcontracted to other certified VOSB/SDVOSB vendor. Work performed by the non-certified VOSB/SDVOSB party shall not be counted toward the goal. Work that a certified VOSB/SDVOSB vendor subcontracts to a non-certified VOSB/SDVOSB vendor will not count towards the goal.

(d) A Vendor shall count toward the goal 100% of its expenditures for materials and supplies required under the contract and obtained from a certified VOSB/SDVOSB vendor manufacturer, regular dealer, or supplier. A Vendor shall count toward the goal the following expenditures to certified VOSB/SDVOSB vendors that are not manufacturers, regular dealers, or suppliers.

(1) The fees or commissions charged for providing a bona fide service, such as professional, technical, consultant or managerial services and assistance in the procurement of essential personnel, facilities, equipment, materials or supplies required for performance of the contract, provided that the fee or commission is determined by the Department to be reasonable and not excessive as compared with fees customarily allowed for similar services.

(2) The fees charged for delivery of materials and supplies required by the contract (but not the cost of the materials and supplies themselves) when the hauler, trucker, or delivery service is not also the manufacturer or a supplier of the materials and supplies being procured, provided that the fee is determined by the Department to be reasonable and not excessive as compared with fees customarily allowed for similar services. The certified VOSB/SDVOSB vendor’s trucking firm must be responsible for the management and supervision of the entire trucking operation for which it is responsible on the contract, and must itself own and operate at least one fully licensed, insured and operational truck used on the contract.

(3) The fees or commissions charged for providing any bonds or insurance specifically required for the performance of the contract, provided that the fee or commission is determined by the Department to be reasonable and not excessive as compared with fees customarily allowed for similar services.

(e) Certified VOSB/SDVOSB vendors who are performing on contract as second tier subcontractors may be counted in meeting the established Veteran Small Business goal for this contract as long as the Prime Vendor can provide documentation indicating the utilization of these vendors.

(f) A Vendor shall not count towards the goal expenditures that are not direct, necessary and related to the work of the contract. Only the amount of services or goods that are directly attributable to the performance of the contract shall be counted. Ineligible expenditures include general office overhead or other Vendor support activities.

CONTRACT COMPLIANCE. Compliance with this section is an essential part of the contract. The following administrative procedures and remedies govern Vendor's compliance with the contractual obligations established by the Utilization Plan. After approval of the Plan and award of the contract, the Utilization Plan becomes part of the contract. If Vendor did not succeed in obtaining certified VOSB/SDVOSB vendor participation to achieve the goal and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of certified VOSB/SDVOSB vendor work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the contract goal. Vendors are encouraged to seek VOSB/SDVOSB firms during the course of performing the contract.

(a) NO AMENDMENT. The Utilization Plan may not be amended after contract execution without the Department's prior written approval.

(b) CHANGES TO WORK. Vendor may not make changes to its contractual certified VOSB/SDVOSB vendor commitments or substitute certified VOSB/SDVOSB vendors without the prior written approval of the Department. Unauthorized changes or substitutions, including performing the work designated for a certified VOSB/SDVOSB vendor with Vendor's own forces, shall be a violation of the utilization plan and a breach of the contract, and shall be cause to terminate the contract, and/or seek other contract remedies or sanctions. The facts supporting the request for changes must not have been known nor reasonably should have been known by the parties prior to entering into the subcontract. Vendor must negotiate with the certified VOSB/SDVOSB vendor to resolve the problem. Where there has been a mistake or disagreement about the scope of work or goods/equipment, provided the certified VOSB/SDVOSB vendor can be substituted only where agreement cannot be reached for a reasonable price or schedule for the correct scope of work, goods or equipment.

Substitutions of a certified VOSB/SDVOSB vendor may be permitted under the following circumstances and possibly others on a case-by-case basis:

(1) Unavailability after receipt of reasonable notice to proceed;

(2) Failure of performance;

(3) Financial incapacity;

(4) Refusal by the certified VOSB/SDVOSB vendor to honor the bid or proposal price or scope;

(5) Material mistake of fact or law about the elements of the scope of work of a solicitation where a reasonable price cannot be agreed;

(6) Failure of the certified VOSB/SDVOSB vendor to meet insurance, licensing or bonding requirements;

(7) The certified VOSB/SDVOSB vendor's withdrawal of its bid or offer; or

(8) Decertification of the certified VOSB/SDVOSB vendor.

If it becomes necessary to substitute a certified VOSB/SDVOSB vendor or otherwise change the Utilization Plan, Vendor must notify the Department in writing of the request to substitute a certified VOSB/SDVOSB vendor or otherwise change the Utilization Plan. The request must state specific reasons for the substitution or change. The Department will approve or deny a request for substitution or other change in the Utilization Plan within five business days of receipt of the request.

Where Vendor has established the basis for the substitution to the Department's satisfaction, it must make good faith efforts to meet the contract goal by substituting a certified VOSB/SDVOSB vendor. Documentation of a replacement certified VOSB/SDVOSB vendor, or of good faith efforts to replace the certified VOSB/SDVOSB vendor, must meet the requirements of the initial Utilization Plan. If the goal cannot be reached and good faith efforts have been made, Vendor may substitute with a non-certified VOSB/SDVOSB vendor or Vendor may perform the work.

When adding a VOSB/SDVOSB, a new certified VOSB/SDVOSB vendor agreement should be executed and submitted to the Department with the appropriate subcontractor approval forms prior to the subcontractor's performance of work on the project.

Vendor shall maintain a record of all relevant data with respect to the utilization of certified VOSB/SDVOSB vendors. Full access to these records shall be granted by Vendor upon 48 hours written demand by the Department to any duly authorized representative thereof, or to any municipal, state or federal authorities. The Department shall have the right to obtain from Vendor any additional data reasonably related or necessary to verify any representations by Vendor. After the performance of the final item of work or delivery of material by the certified VOSB/SDVOSB vendor and final payment to the certified VOSB/SDVOSB vendor by Vendor, but not later than 15 calendar days after such payment, Vendor shall submit a statement confirming the final payment and the total payments made to the certified VOSB/SDVOSB vendor under the contract.

The Department will periodically review Vendor's compliance with these provisions and the terms of its contract. Without limitation, Vendor's failure to comply with these provisions or its contractual commitments as contained in the Utilization Plan, failure to cooperate in providing information regarding its compliance with these provisions or its Utilization Plan, or provision of false or misleading information or statements concerning compliance, certification status or eligibility of the certified VOSB/SDVOSB vendor, good faith efforts or any other material fact or representation shall constitute a material breach of this contract and entitle the Department to declare a default, terminate the contract, or exercise those remedies provided for in the contract or at law or in equity.

The Department reserves the right to withhold payment to Vendor to enforce these provisions and Vendor's contractual commitments. Final payment shall not be made pursuant to the contract until Vendor submits sufficient documentation demonstrating compliance with its Utilization Plan.

****RETURN WITH BID****

VETERAN BUSINESS PROGRAM (VBP) UTILIZATION PLAN

The VBP Utilization Plan includes the Letters of Intent and Good Faith Efforts.

(Vendor)_____ submits the following Utilization Plan as part of our bid or offer in accordance with the requirements of the (VBP). We understand that all subcontractors must be certified with the CMS Veteran Small Business Program at the time of submission of all bids. We understand that compliance with this section is an essential part of this contract and that the Utilization Plan will become a part of the contract, if awarded.

Vendor submits the following statement:

___ Vendor is a certified VOSB/SDVOSB and plans to fully meet the goal through self-performance.

___ Vendor has identified certified VOSB/SDVOSB subcontractor(s) to fully meet the established goal and submits the attached completed Letter(s) of Intent; or

___ Vendor has made good faith efforts towards meeting the entire goal, or a portion of the goal, and hereby requests a waiver (complete checklist below).

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Vendor's person responsible for compliance:

Name: Title:

Telephone: Email

DEMONSTRATION OF GOOD FAITH EFFORTS TO ACHIEVE GOAL AND REQUEST FOR WAIVER

If the Veteran Small Business participation goal was not achieved, the Good Faith Efforts Procedures and Guidelines outlined in Contract Compliance will be used to evaluate submitted utilization plans. Vendors providing Good Faith Effort documentation and request for waiver must complete and submit the Good Faith Effort Contact Log with the bid or offer. Failure to submit Good Faith Effort documentation in its entirety shall render Vendor's bid nonresponsive or not responsible and cause it to be rejected or render Vendor ineligible for contract award. Insufficient Good Faith Effort documentation may render the bidder nonresponsive or not responsible.

Below is a checklist of actions that will be used to evaluate a Vendor's Demonstration of Good Faith Efforts and Request for Waiver. Please check the actions which you completed. If any of the following actions are not completed, please attach a detailed written explanation indicating why such action was not completed. If any other efforts were made to obtain Veteran Small Business participation in addition to the items listed below, attach a detailed description of such efforts.

____ Utilize the Sell2Illinois website: www2.illinois.gov/cms/business to identify certified VOSB/SDVOSB vendors within the respective commodity/service codes denoted above and at a minimum email all listed vendors and solicit quotes from all vendors who express an interest via follow-up emails or telephone calls.

____ Solicit through all reasonable and available means (e.g., attendance at a vendor conference, advertising and/or written notices) the interest of certified VOSB/SDVOSB vendors that have the capability to perform the work of the contract. Vendor must solicit this interest within sufficient time to allow the certified VOSB/SDVOSB vendors to respond to the solicitation. Vendor must determine with certainty if the certified VOSB/SDVOSB vendors are interested by taking appropriate steps to follow up initial solicitations and encourage them to submit a bid or proposal. Vendor must provide interested certified VOSB/SDVOSB vendors with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding promptly to the solicitation.

____ Select portions of the work to be performed by certified VOSB/SDVOSB vendors in order to increase the likelihood that the goal will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate certified VOSB/SDVOSB vendor participation, even when Vendor might otherwise prefer to perform these work items with its own forces.

____ Make a portion of the work available to certified VOSB/SDVOSB vendors and selecting those portions of the work or material needs consistent with their availability, so as to facilitate certified VOSB/SDVOSB vendor participation.

****RETURN WITH BID****

____ Negotiate in good faith with interested certified VOSB/SDVOSB vendors. Evidence of such negotiation must include the names, addresses, email addresses, and telephone numbers of certified VOSB/SDVOSB vendors 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 certified VOSB/SDVOSB vendors to perform the work. A Vendor using good business judgment may consider a number of factors in negotiating with certified VOSB/SDVOSB vendors and may take a firm's price and capabilities into consideration. The fact that there may be some additional costs involved in finding and using certified VOSB/SDVOSB vendors may not be in itself sufficient reason for a Vendor's failure to meet the goal, as long as such costs are reasonable. Vendors are not required to accept higher quotes from certified VOSB/SDVOSB vendors if the price difference is excessive or unreasonable.

____ Thoroughly investigate the capabilities of certified VOSB/SDVOSB vendors and not reject them as unqualified without documented reasons.

____ Make efforts to assist interested certified VOSB/SDVOSB vendors in obtaining lines of credit or insurance as required by the State.

____ Make efforts to assist interested certified VOSB/SDVOSB vendors in obtaining necessary equipment, supplies, materials, or related assistance or services.

****RETURN WITH BID****

GOOD FAITH EFFORTS CONTACT LOG

Use this Log to document all contacts and responses (telephone, e-mail, fax, etc.) regarding the solicitation of certified VOSB/SDVOSB vendors within the specific scope of work selected. It is not necessary to show contacts with certified VOSB/SDVOSB vendors who are identified on the Letter(s) of Intent. Keep and submit copies of all emails sent and received from prospective vendors. Include a copy of the commodity list or scope of work you solicited prospective vendors to perform. Duplicate this log as necessary; do not limit your contacts to the number of spaces shown.

Name of Certified Veteran Small Business Vendor	Date	Method of Contact	Scope of Work Solicited	Reason Agreement Was Not Reached

****RETURN WITH BID****

LETTER OF INTENT (LOI)

BETWEEN PRIME VENDOR AND CERTIFIED VETERAN SMALL BUSINESS VENDOR

Instructions: The Bidder is required to submit a separate, signed LOI from each identified certified VOSB/SDVOSB vendor (hereinafter "certified vendors"). **LOIs must be submitted with the Bid and must be signed by both parties**. The Prime Bidder shall not prohibit or otherwise limit certified vendor(s) from providing bids or quotes to other potential bidders. Each LOI shall include the dollar amount, percentage, and scope of work to be performed by each identified certified vendor. All LOI's shall be subject to Department approval.

Any changes involving or affecting the identified certified vendor(s) may not be permitted without written approval of the Department.

Contract Number:

Name of Vendor: Name of Contact Person:

Address:

City, State and Zip:

Telephone: Fax: Email:

Name of Certified Veteran Small Business Vendor: Name of Contact Person:

Address:

City, State and Zip:

Telephone: Fax: Email:

Proposed % of Contract to be performed by the certified vendor firm: _____%

Proposed dollar amount of Contract to be performed by the certified vendor: $_____

Description of work to be performed by the certified vendor firm:

Vendor and the Certified vendor above hereby agree that upon the execution of a contract for the above-named project between Bidder and the State of Illinois, the certified vendor will perform the scope of work for the percentage as indicated above.

Bidder (Company Name or D/B/A):	Certified Vendor (Company Name or D/B/A):
Signature:	Signature:
Printed Name:	Printed Name:
Title:	Title:
Date:	Date:

REVISIONS TO THE ILLINOIS PREVAILING WAGE RATES

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.