

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

**PREQUALIFICATION**

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

**REQUESTS FOR AUTHORIZATION TO BID**

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

**WHO CAN BID ?**

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

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

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

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

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

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

***IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.***

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

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

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

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

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

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

**WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?**

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

**ADDENDUMS AND REVISIONS TO THE PROPOSAL FORMS**

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

RETURN WITH BID

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Proposal Submitted By
Name
Address
City

Letting July 30, 2010

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

**NOTICE TO PROSPECTIVE BIDDERS**

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

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



**Illinois Department  
of Transportation**

Springfield, Illinois 62764

**Contract No. 63485  
LAKE County  
Section 06-00924-00-TL  
Various Routes  
Project CMM-9003(217)  
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

Prepared by

Checked by

F

(Printed by authority of the State of Illinois)

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## INSTRUCTIONS

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

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

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

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

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

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

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

### WHO SHOULD BE CALLED IF ASSISTANCE IS NEEDED?

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

RETURN WITH BID



PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of \_\_\_\_\_  
\_\_\_\_\_

Taxpayer Identification Number (Mandatory) \_\_\_\_\_

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

**Contract No. 63485  
LAKE County  
Section 06-00924-00-TL  
Project CMM-9003(217)  
Various Routes  
District 1 Construction Funds**

**Project consists of the installation of a new fiber optic interconnect cable and modification of the existing traffic signals along various routes in Highland Park.**

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



**RETURN WITH BID**

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

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

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

**Schedule of Combination Bids**

Combination No.	Sections Included in Combination	Combination Bid	
		Dollars	Cents

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

STATE JOB # - C-91-275-09  
 PPS NBR - 1-11011-0000

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT NUMBER - 63485

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 RUN DATE - 06/16/10  
 RUN TIME - 183923

COUNTY NAME	CODE	DIST	SECTION NUMBER	PROJECT NUMBER	ROUTE
LAKE	097	01	06-00924-00-TL	CMM-9003/217/000	VARIOUS

ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	CENTS	TOTAL PRICE DOLLARS	CTS
XX003661	ELCBL C COAXIAL	FOOT	2,595.000				
XX003665	REBLD EX HH TO DB HH	EACH	2.000				
XX005931	TRAF SIGL P 16FT SPL	EACH	1.000				
XX005932	TRAF SIGL P 18FT SPL	EACH	1.000				
XX005940	REMOTE CONTR VIDEO SY	EACH	15.000				
XX006390	VID COMM SYS AND CAB	EACH	1.000				
XX006655	LYR II DATALINK SWTCH	EACH	24.000				
XX007017	TERM FIBER IN CABINET	EACH	92.000				
XX007018	LAYER 3 (NET) SWITCH	EACH	1.000				
XX008246	FIB OPT CBL C 24 SM	FOOT	49,064.000				
XX008251	SPLICE FIBER IN CAB	EACH	230.000				
XX008253	VIDEO ENCODER	EACH	15.000				
XX008254	LYR III FO TM SFP LD	EACH	2.000				
XX008255	LYR III FO TM GBIC LD	EACH	1.000				
XX008256	UPGR EX CON NTCIP SPL	EACH	1.000				

VARIOUS  
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ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
XX008391	ELCBL C 4/C 20, VID	FOOT	2,595.000	=			
XX008392	OUTDR RTD NTWRK CABLE	FOOT	100.000	=			
XX008396	CAMERA MOUNT ASSEM SP	EACH	8.000	=			
X0322925	ELCBL C TRACER 14 1C	FOOT	45,296.000	=			
X0324245	CONC FDN SURV CAB 334	EACH	1.000	=			
X0325462	MEDIA CONVERTER	EACH	9.000	=			
X0325705	RE-OPTIMIZE SIG SYS 2	EACH	25.000	=			
X0326275	RR ROW ENTRY PERMIT	EACH	2.000	=			
X0326856	RA SA FL BEACON SYS C	EACH	1.000	=			
X8050010	SERV INSTALL GRND MT	EACH	1.000	=			
X8050015	SERV INSTALL POLE MT	EACH	15.000	=			
X8620020	UNINTER POWER SUPPLY	EACH	25.000	=			
X8730027	ELCBL C GROUND 6 1C	FOOT	1,302.000	=			
X8730320	EC C SIGL 20 3C TW SH	FOOT	652.000	=			
X8770220	S MAA & P DMA 22&24SP	EACH	1.000	=			

VARIOUS  
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SCHEDULE OF PRICES  
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE DOLLARS	CENTS	TOTAL PRICE DOLLARS	CTS
X8780110	MOD EX TY D FDN	EACH	2.000				
X8800101	PED PUSH-BUTTON SPL	EACH	9.000				
X8808118	OPSH LED 1F 3S BM	EACH	2.000				
X8808120	OPSH LED 1F 3S MAM	EACH	2.000				
X8809045	CSH LED 2F 3SOP 3S BM	EACH	1.000				
Z0010688	CAMERA MOUNT ASSEMBLY	EACH	1.000				
Z0048665	RR PROT LIABILITY INS	L SUM	1.000				
Z0076600	TRAINEES	HOUR	500.000	0.80		400.00	
42400200	PC CONC SIDEWALK 5	SQ FT	466.000				
42400800	DETECTABLE WARNINGS	SQ FT	128.000				
44000600	SIDEWALK REM	SQ FT	441.000				
44001700	COMB C C&G REM & REPL	FOOT	113.000				
67000400	ENGR FIELD OFFICE A	CAL MO	10.000				
67100100	MOBILIZATION	L SUM	1.000				
70102620	TR CONT & PROT 701501	L SUM	1.000				

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SCHEDULE OF PRICES  
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	CTS
				DOLLARS	CENTS		
70102635	TR CONT & PROT 701701	L SUM	1.000	=			
70102640	TR CONT & PROT 701801	L SUM	1.000	=			
72000100	SIGN PANEL T1	SQ FT	9.000	=			
72000200	SIGN PANEL T2	SQ FT	26.250	=			
78000600	THPL PVT MK LINE 12	FOOT	84.000	=			
78000650	THPL PVT MK LINE 24	FOOT	15.000	=			
78008200	POLYUREA PM T1 LTR-SY	SQ FT	36.400	=			
78008230	POLYUREA PM T1 LN 6	FOOT	93.000	=			
78008250	POLYUREA PM T1 LN 12	FOOT	306.000	=			
78008270	POLYUREA PM T1 LN 24	FOOT	65.000	=			
78300100	PAVT MARKING REMOVAL	SQ FT	487.000	=			
81000600	CON T 2 GALVS	FOOT	24,447.000	=			
81000700	CON T 2 1/2 GALVS	FOOT	95.000	=			
81000800	CON T 3 GALVS	FOOT	19.000	=			
81001000	CON T 4 GALVS	FOOT	61.000	=			

VARIOUS  
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ILLINOIS DEPARTMENT OF TRANSPORTATION  
SCHEDULE OF PRICES  
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE
				DOLLARS	CENTS	
81018500	CON P 2 GALVS	FOOT	7,922.000	=		
81018900	CON P 4 GALVS	FOOT	160.000	=		
81100600	CON AT ST 2 GALVS	FOOT	275.000	=		
81300945	JUN BX SS AS 24X24X8	EACH	6.000	=		
81400100	HANDHOLE	EACH	53.000	=		
81400200	HD HANDHOLE	EACH	4.000	=		
81400300	DBL HANDHOLE	EACH	2.000	=		
81900200	TR & BKFIL F ELECT WK	FOOT	24,726.000	=		
85000200	MAIN EX TR SIG INSTAL	EACH	28.000	=		
85700205	FAC T4 CAB SPL	EACH	12.000	=		
85700505	FAC IN EXIST CAB SPL	EACH	12.000	=		
87301215	ELCBL C SIGNAL 14 2C	FOOT	773.000	=		
87301225	ELCBL C SIGNAL 14 3C	FOOT	4,397.000	=		
87301245	ELCBL C SIGNAL 14 5C	FOOT	779.000	=		
87301255	ELCBL C SIGNAL 14 7C	FOOT	1,235.000	=		

VARIOUS  
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ILLINOIS DEPARTMENT OF TRANSPORTATION  
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	CTS
				DOLLARS	CENTS		
87301305	ELCBL C LEAD 14 1PR	FOOT	1,195.000	=			
87301805	ELCBL C SERV 6 2C	FOOT	25.000	=			
87301815	ELCBL C SERV 6 3C	FOOT	30.000	=			
87701180	S MAA & P 28 SPL	EACH	1.000	=			
87704070	STL COMB MAA&P 28 SPL	EACH	1.000	=			
87800100	CONC FDN TY A	FOOT	12.000	=			
87800150	CONC FDN TY C	FOOT	4.000	=			
87800400	CONC FDN TY E 30D	FOOT	20.000	=			
87800415	CONC FDN TY E 36D	FOOT	15.000	=			
87900200	DRILL EX HANDHOLE	EACH	32.000	=			
88030020	SH LED 1F 3S MAM	EACH	4.000	=			
88030050	SH LED 1F 3S BM	EACH	1.000	=			
88030080	SH LED 1F 4S MAM	EACH	3.000	=			
88030110	SH LED 1F 5S MAM	EACH	1.000	=			
88030214	SH LED 2F 4S BM	EACH	1.000	=			

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LAKE

ILLINOIS DEPARTMENT OF TRANSPORTATION  
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ITEM NUMBER	PAY ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE		TOTAL PRICE	
				DOLLARS	CENTS	DOLLARS	CTS
88030240	SH LED 2F 1-3 1-5 BM	EACH	1.000				
88102717	PED SH LED 1F BM CDT	EACH	8.000				
88102747	PED SH LED 2F BM CDT	EACH	4.000				
88200210	TS BACKPLATE LOU ALUM	EACH	8.000				
88500100	INDUCTIVE LOOP DETECT	EACH	74.000				
88600100	DET LOOP T1	FOOT	328.000				
88700200	LIGHT DETECTOR	EACH	3.000				
88700300	LIGHT DETECTOR AMP	EACH	1.000				
88800100	PED PUSH-BUTTON	EACH	4.000				
89000100	TEMP TR SIG INSTALL	EACH	1.000				
89501410	REL EM VEH PR SYS P U	EACH	11.000				
89502210	MOD EX CONTR CAB	EACH	13.000				
89502375	REMOV EX TS EQUIP	EACH	24.000				
89502380	REMOV EX HANDHOLE	EACH	8.000				
89502385	REMOV EX CONC FDN	EACH	8.000				

TOTAL \$

NOTE:  
\*\*\* PLEASE TURN PAGE FOR IMPORTANT NOTES \*\*\*

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ILLINOIS DEPARTMENT OF TRANSPORTATION  
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NOTE:

1. EACH PAY ITEM SHOULD HAVE A UNIT PRICE AND A TOTAL PRICE.
2. THE UNIT PRICE SHALL GOVERN IF NO TOTAL PRICE IS SHOWN OR IF THERE IS A DISCREPANCY BETWEEN THE PRODUCT OF THE UNIT PRICE MULTIPLIED BY THE QUANTITY.
3. IF A UNIT PRICE IS OMITTED, THE TOTAL PRICE WILL BE DIVIDED BY THE QUANTITY IN ORDER TO ESTABLISH A UNIT PRICE.
4. A BID MAY BE DECLARED UNACCEPTABLE IF NEITHER A UNIT PRICE NOR A TOTAL PRICE IS SHOWN.

## RETURN WITH BID

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

#### **I. GENERAL**

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

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

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

#### **II. ASSURANCES**

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

##### **A. Conflicts of Interest**

1. The Illinois Procurement Code provides in pertinent part:

Section 50-13. Conflicts of Interest.

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

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

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

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

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

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

## RETURN WITH BID

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

### **B. Negotiations**

1. The Illinois Procurement Code provides in pertinent part:

Section 50-15. Negotiations.

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

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

### **C. Inducements**

1. The Illinois Procurement Code provides:

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

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

### **D. Revolving Door Prohibition**

1. The Illinois Procurement Code provides:

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

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

### **E. Reporting Anticompetitive Practices**

1. The Illinois Procurement Code provides:

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

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

### **F. Confidentiality**

1. The Illinois Procurement Code provides:

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

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

## RETURN WITH BID

### **G. Insider Information**

1. The Illinois Procurement Act provides:

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

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

### **III. CERTIFICATIONS**

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

#### **A. Bribery**

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

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

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

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

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

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

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

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

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

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

#### **B. Felons**

1. The Illinois Procurement Code provides:

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

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

## RETURN WITH BID

### **C. Debt Delinquency**

1. The Illinois Procurement Code provides:

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

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

### **D. Prohibited Bidders, Contractors and Subcontractors**

1. The Illinois Procurement Code provides:

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

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

### **E. Section 42 of the Environmental Protection Act**

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

### **F. Educational Loan**

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

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

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

### **G. Bid-Rigging/Bid Rotating**

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

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

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

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

## RETURN WITH BID

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

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

### **H. International Anti-Boycott**

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

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

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

### **I. Drug Free Workplace**

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

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

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

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

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

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

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

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

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

## RETURN WITH BID

### J. Disclosure of Business Operations in Iran

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

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

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

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

Check the appropriate statement:

Company has no business operations in Iran to disclose.

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

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

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

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

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

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

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

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

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

**M. Lobbyist Disclosure**

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

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

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

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

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

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

Or

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

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

## RETURN WITH BID

### IV. DISCLOSURES

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

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

### B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all bids of more than \$10,000 shall be accompanied by disclosure of the financial interests of the bidder. This disclosed information for the successful bidder, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the contract. Furthermore, pursuant to Section 5-5, the Procurement Policy Board may review a proposal, bid, or contract and issue a recommendation to void a contract or reject a proposal or bid based on any violation of the Procurement Code or the existence of a conflict of interest as provided in subsections (b) and (d) of Section 50-35.

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

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

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

### C. Disclosure Form Instructions

#### Form A Instructions for Financial Information & Potential Conflicts of Interest

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

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES \_\_\_ NO \_\_\_
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than \$106,447.20? YES \_\_\_ NO \_\_\_
3. Does anyone in your organization receive more than \$106,447.20 of the bidding entity's or parent entity's distributive income? (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.) YES \_\_\_ NO \_\_\_
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 \$106,447.20? YES \_\_\_ NO \_\_\_  
(Note: Only one set of forms needs to be completed per person per bid even if a specific individual would require a yes answer to more than one question.)

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

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

## RETURN WITH BID

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

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

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

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

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

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 the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Vendors desiring to enter into a contract with the State of Illinois must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for bids in excess of \$10,000, 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.**

**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 \$106,447.20 (60% of the Governor's salary as of 7/1/07). **(Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)**

<b>FOR INDIVIDUAL (type or print information)</b>	
<b>NAME:</b>	_____
<b>ADDRESS</b>	_____
<b>Type of ownership/distributable income share:</b>	
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.

- Are you currently an officer or employee of either the Capitol Development Board or the Illinois Toll Highway Authority?  
Yes \_\_\_ No \_\_\_
- 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) provide the name the State agency for which you are employed and your annual salary. \_\_\_\_\_  
\_\_\_\_\_

**RETURN WITH BID**

- 3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds \$106,447.20, (60% of the Governor's salary as of 7/1/07) are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of the 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) are you and your spouse or minor children entitled to receive (i) more than 15% in aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor? Yes \_\_\_ No \_\_\_

(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 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) provide the name of the spouse and/or minor children, the name of the State agency for which he/she is employed and his/her annual salary. \_\_\_\_\_
  


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- 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 \$106,447.20.00, (60% of the salary of the Governor as of 7/1/07) are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of the 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) are you and your spouse or any minor children entitled to receive (i) more than 15% in the aggregate of the total distributable income from your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor? Yes \_\_\_ No \_\_\_

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

Yes \_\_\_ No \_\_\_

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

Yes \_\_\_ No \_\_\_

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

Yes \_\_\_ No \_\_\_

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

Yes \_\_\_ No \_\_\_

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

Yes \_\_\_ No \_\_\_

**RETURN WITH BID**

(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): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**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 Procurement Code.

**ILLINOIS DEPARTMENT  
OF TRANSPORTATION**

**Form B  
Other Contracts &  
Procurement Related Information  
Disclosure**

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for bids in excess of \$10,000, and for all open-ended contracts.

**DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION**

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

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

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

**THE FOLLOWING STATEMENT MUST BE CHECKED**

<input type="checkbox"/>	<hr style="width: 80%; margin: 0 auto;"/> Signature of Authorized Representative	<hr style="width: 10%; margin: 0 auto;"/> Date
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## **RETURN WITH BID**

### **SPECIAL NOTICE TO CONTRACTORS**

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

#### **CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION**

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



**RETURN WITH BID**

**Contract No. 63485  
LAKE County  
Section 06-00924-00-TL  
Project CMM-9003(217)  
Various Routes  
District 1 Construction Funds**

**PART II. WORKFORCE PROJECTION - continued**

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

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

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

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

**PART III. AFFIRMATIVE ACTION PLAN**

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

Company \_\_\_\_\_

Telephone Number \_\_\_\_\_

Address \_\_\_\_\_

**NOTICE REGARDING SIGNATURE**

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

Signature:  \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Instructions: All tables must include subcontractor personnel in addition to prime contractor personnel.

Table A - Include both the number of employees that would be hired to perform the contract work and the total number currently employed (Table B) that will be allocated to contract work, and include all apprentices and on-the-job trainees. The "Total Employees" column should include all employees including all minorities, apprentices and on-the-job trainees to be employed on the contract work.

Table B - Include all employees currently employed that will be allocated to the contract work including any apprentices and on-the-job trainees currently employed.

Table C - Indicate the racial breakdown of the total apprentices and on-the-job trainees shown in Table A.

**RETURN WITH BID**

**ADDITIONAL FEDERAL REQUIREMENTS**

In addition to the Required Contract Provisions for Federal-Aid Construction Contracts (FHWA 1273), all bidders make the following certifications.

- A. By the execution of this proposal, the signing bidder certifies that the bidding entity has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted bid. This statement made by the undersigned bidder is true and correct under penalty of perjury under the laws of the United States.
- B. CERTIFICATION, EQUAL EMPLOYMENT OPPORTUNITY:
1. Have you participated in any previous contracts or subcontracts subject to the equal opportunity clause. YES \_\_\_\_\_ NO \_\_\_\_\_
  2. If answer to #1 is yes, have you filed with the Joint Reporting Committee, the Director of OFCC, any Federal agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements of those organizations? YES \_\_\_\_\_ NO \_\_\_\_\_

**RETURN WITH BID**

**Contract No. 63485  
LAKE County  
Section 06-00924-00-TL  
Project CMM-9003(217)  
Various Routes  
District 1 Construction Funds**

PROPOSAL SIGNATURE SHEET

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

(IF AN INDIVIDUAL)

Firm Name \_\_\_\_\_  
Signature of Owner \_\_\_\_\_  
Business Address \_\_\_\_\_  
\_\_\_\_\_

(IF A CO-PARTNERSHIP)

Firm Name \_\_\_\_\_  
By \_\_\_\_\_  
Business Address \_\_\_\_\_  
Name and Address of All Members of the Firm: \_\_\_\_\_  
\_\_\_\_\_

(IF A CORPORATION)

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

(IF A JOINT VENTURE)

Corporate Name \_\_\_\_\_  
By \_\_\_\_\_  
Signature of Authorized Representative \_\_\_\_\_  
Typed or printed name and title of Authorized Representative \_\_\_\_\_  
Attest \_\_\_\_\_  
Signature \_\_\_\_\_  
Business Address \_\_\_\_\_  
\_\_\_\_\_

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



Return with Bid

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

Item No. \_\_\_\_\_

Letting Date \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, That We \_\_\_\_\_

as PRINCIPAL, and \_\_\_\_\_

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

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

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

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

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

their respective officers this \_\_\_\_\_ day of \_\_\_\_\_ A.D., \_\_\_\_\_ .

**PRINCIPAL**

**SURETY**

\_\_\_\_\_  
(Company Name)

\_\_\_\_\_  
(Company Name)

By \_\_\_\_\_  
(Signature & Title)

By: \_\_\_\_\_  
(Signature of Attorney-in-Fact)

**Notary Certification for Principal and Surety**

STATE OF ILLINOIS,  
County of \_\_\_\_\_

I, \_\_\_\_\_, a Notary Public in and for said County, do hereby certify that

\_\_\_\_\_ and \_\_\_\_\_  
(Insert names of individuals signing on behalf of PRINCIPAL & SURETY)

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

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

My commission expires \_\_\_\_\_

\_\_\_\_\_  
Notary Public

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

\_\_\_\_\_  
Electronic Bid Bond ID#

\_\_\_\_\_  
Company / Bidder Name



\_\_\_\_\_  
Signature and Title

**(1) Policy**

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

**(2) Obligation**

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

**(3) Project and Bid Identification**

Complete the following information concerning the project and bid:

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

**(4) Assurance**

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

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

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

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

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

\_\_\_\_\_  
Company

By \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

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

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

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

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.



# PROPOSAL ENVELOPE



# PROPOSALS

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

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

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

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

## **NOTICE**

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

# CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

## NOTICE

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

**Contract No. 63485  
LAKE County  
Section 06-00924-00-TL  
Project CMM-9003(217)  
Various Routes  
District 1 Construction Funds**



**Illinois Department of Transportation**

## **SUBCONTRACTOR DOCUMENTATION**

P.A. 96-0795, effective July 1, 2010, enacted substantial changes to the provisions of the Illinois Procurement Code (30 ILCS 500). Among the changes are provisions affecting subcontractors. The Contractor awarded this contract will be required as a material condition of the contract to implement and enforce the contract requirements applicable to subcontractors approved in accordance with article 108.01 of the Standard Specifications for Road and Bridge Construction.

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

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

**STATE ETHICAL STANDARDS**  
**GOVERNING SUBCONTRACTORS**

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

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

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

**A. Bribery**

1. The Illinois Procurement Code provides:

Section 50-5. Bribery.

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

- (1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or
- (2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.

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

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

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

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

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

**B. Felons**

1. The Illinois Procurement Code provides:

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

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

**C. Debt Delinquency**

1. The Illinois Procurement Code provides:

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

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

**D. Prohibited Bidders, Contractors and Subcontractors**

1. The Illinois Procurement Code provides:

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

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

**E. Section 42 of the Environmental Protection Act**

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

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

<hr/>		
Name of Subcontracting Company		
<hr/>		<hr/>
Authorized Officer		Date

## RETURN WITH SUBCONTRACT

### SUBCONTRACTOR DISCLOSURES

#### I. DISCLOSURES

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

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

#### B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Illinois Procurement Code provides that all subcontracts of more than \$10,000 shall be accompanied by disclosure of the financial interests of the subcontractor. This disclosed information for the subcontractor, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the Prime Contractor's contract. Furthermore, pursuant to this Section, the Procurement Policy Board may recommend to allow or void a contract or subcontract based on a potential conflict of interest.

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

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

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

#### C. Disclosure Form Instructions

##### Form A Instructions for Financial Information & Potential Conflicts of Interest

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

1. Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES \_\_\_ NO \_\_\_
2. Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than \$106,447.20? YES \_\_\_ NO \_\_\_
3. Does anyone in your organization receive more than \$106,447.20 of the subcontracting entity's or parent entity's distributive income? (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.) YES \_\_\_ NO \_\_\_
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 \$106,447.20? YES \_\_\_ NO \_\_\_

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

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

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

## RETURN WITH SUBCONTRACT

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

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

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

ILLINOIS DEPARTMENT OF TRANSPORTATION

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

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Code (30 ILCS 500). Subcontractors desiring to enter into a subcontract of a State of Illinois contract must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for bids in excess of \$10,000, 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.

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 \$106,447.20 (60% of the Governor's salary as of 7/1/07). (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 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) provide the name the State agency for which you are employed and your annual salary.

**RETURN WITH SUBCONTRACT**

3. If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds \$106,447.20, (60% of the Governor's salary as of 7/1/07) are you entitled to receive (i) more than 7 1/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of the 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor? Yes \_\_\_ No \_\_\_

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(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 \$106,447.20, (60 % of the Governor's salary as of 7/1/07) 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 \$106,447.20, (60% of the salary of the Governor as of 7/1/07) are you entitled to receive (i) more then 71/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of the 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 \$106,447.20, (60% of the Governor's salary as of 7/1/07) are you and your spouse or minor children entitled to receive (i) more than 15 % in the aggregate of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of 2 times the salary of the Governor? Yes \_\_\_ No \_\_\_

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(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 \_\_\_

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

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(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 \_\_\_

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

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

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**RETURN WITH SUBCONTRACT**

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

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

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

**APPLICABLE STATEMENT**

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

Completed by:  \_\_\_\_\_ Date \_\_\_\_\_  
Signature of Individual or Authorized Officer

**NOT APPLICABLE STATEMENT**

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

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

\_\_\_\_\_ Date \_\_\_\_\_  
Signature of Authorized Officer

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT  
OF TRANSPORTATION

Form B  
Subcontractor: Other Contracts &  
Procurement Related Information  
Disclosure

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

Disclosure of the information contained in this Form is required by the Section 50-35 of the Illinois Procurement Act (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for bids in excess of \$10,000, and for all open-ended contracts.

**DISCLOSURE OF OTHER CONTRACTS, SUBCONTRACTS, AND PROCUREMENT RELATED INFORMATION**

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

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

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

**THE FOLLOWING STATEMENT MUST BE CHECKED**

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



## NOTICE TO BIDDERS

- 1. TIME AND PLACE OF OPENING BIDS.** Sealed proposals for the improvement described herein will be received by the Department of Transportation at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 o'clock a.m., July 30, 2010. All bids will be gathered, sorted, publicly opened and read in the auditorium at the Department of Transportation's Harry R. Hanley Building shortly after the 10:00 a.m. cut off time.
- 2. DESCRIPTION OF WORK.** The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

**Contract No. 63485  
LAKE County  
Section 06-00924-00-TL  
Project CMM-9003(217)  
Various Routes  
District 1 Construction Funds**

**Project consists of the installation of a new fiber optic interconnect cable and modification of the existing traffic signals along various routes in Highland Park.**

- 3. INSTRUCTIONS TO BIDDERS.** (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 101.09 of the Standard Specifications for Road and Bridge Construction, become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.  
  
(b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.
- 4. AWARD CRITERIA AND REJECTION OF BIDS.** This contract will be awarded to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to readvertise the proposed improvement, and to waive technicalities.

By Order of the  
Illinois Department of Transportation

Gary Hannig,  
Secretary

INDEX  
FOR  
SUPPLEMENTAL SPECIFICATIONS  
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2010

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

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

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LR 1004		<input type="checkbox"/> Coarse Aggregate for Bituminous Surface Treatment	Jan. 1, 2002	Jan. 1, 2007
LR 1013		<input type="checkbox"/> Rock Salt (Sodium Chloride)	Aug. 1, 1969	Jan. 1, 2002
LR 1030		<input type="checkbox"/> Growth Curve	Mar. 1, 2008	
LR 1032-1		<input type="checkbox"/> Emulsified Asphalts	Jan. 1, 2007	Feb. 7, 2008
LR 1032-2		<input type="checkbox"/> Multigrade Cold Mix Asphalt	Jan. 1, 2007	Feb. 1, 2007
LR 1102		<input type="checkbox"/> Road Mix or Traveling Plan Mix Equipment	Jan. 1, 2007	

BDE SPECIAL PROVISIONS  
For the July 30 and September 17, 2010 Lettings

The following special provisions indicated by an "x" are applicable to this contract. An \* indicates a new or revised special provision for the letting.

<u>File Name</u>	<u>Pg #</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80240		Above Grade Inlet Protection	July 1, 2009	
80099		Accessible Pedestrian Signals (APS)	April 1, 2003	Jan. 1, 2007
80243		American Recovery and Reinvestment Act Provisions	April 1, 2009	
80236		American Recovery and Reinvestment Act Signing	April 1, 2009	April 15, 2009
80186	159	X Alkali-Silica Reaction for Cast-in-Place Concrete	Aug. 1, 2007	Jan. 1, 2009
80213		Alkali-Silica Reaction for Precast and Precast Prestressed Concrete	Jan. 1, 2009	
80207	162	X Approval of Proposed Borrow Areas, Use Areas, and/or Waste Areas Inside Illinois State Borders	Nov. 1, 2008	
80192		Automated Flagger Assistance Device	Jan. 1, 2008	
80173		Bituminous Materials Cost Adjustments	Nov. 2, 2006	April 1, 2009
80241		Bridge Demolition Debris	July 1, 2009	
50261		Building Removal-Case I (Non-Friable and Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50481		Building Removal-Case II (Non-Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50491		Building Removal-Case III (Friable Asbestos)	Sept. 1, 1990	April 1, 2010
50531		Building Removal-Case IV (No Asbestos)	Sept. 1, 1990	April 1, 2010
80166	163	X Cement	Jan. 1, 2007	April 1, 2009
* 80260	166	X Certification of Metal Fabricator	July 1, 2010	
80198		Completion Date (via calendar days)	April 1, 2008	
80199		Completion Date (via calendar days) Plus Working Days	April 1, 2008	
80094	167	X Concrete Admixtures	Jan. 1, 2003	April 1, 2009
80214		Concrete Gutter, Type A	Jan. 1, 2009	
80215		Concrete Joint Sealer	Jan. 1, 2009	
80226	171	X Concrete Mix Designs	April 1, 2009	
* 80261	173	X Construction Air Quality – Diesel Retrofit	June 1, 2010	
80237	176	X Construction Air Quality – Diesel Vehicle Emissions Control	April 1, 2009	July 1, 2009
80239	178	X Construction Air Quality – Idling Restrictions	April 1, 2009	
80227		Determination of Thickness	April 1, 2009	
80177		Digital Terrain Modeling for Earthwork Calculations	April 1, 2007	
80029	180	X Disadvantaged Business Enterprise Participation	Sept. 1, 2000	Jan. 1, 2010
80178	189	X Dowel Bars	April 1, 2007	Jan. 1, 2008
80179	190	X Engineer's Field Office Type A	April 1, 2007	Aug. 1, 2008
80205		Engineer's Field Office Type B	Aug. 1, 2008	
80189	193	X Equipment Rental Rates	Aug. 2, 2007	Jan. 2, 2008
80228		Flagger at Side Roads and Entrances	April 1, 2009	
80249		Frames and Grates	Jan. 1, 2010	
80229		Fuel Cost Adjustment	April 1, 2009	July 1, 2009
80169		High Tension Cable Median Barrier	Jan. 1, 2007	April 1, 2009
80194		HMA – Hauling on Partially Completed Full-Depth Pavement	Jan. 1, 2008	
80245		Hot-Mix Asphalt – Anti-Stripping Additive	Nov. 1, 2009	
80246		Hot-Mix Asphalt – Density Testing of Longitudinal Joints	Jan. 1, 2010	
80250		Hot-Mix Asphalt – Drop-Offs	Jan. 1, 2010	
80259		Hot-Mix Asphalt – Fine Aggregate	April 1, 2010	
80201		Hot-Mix Asphalt – Plant Test Frequency	April 1, 2008	Jan. 1, 2010
80251		Hot-Mix Asphalt – QC/QA Acceptance Criteria	Jan. 1, 2010	
80202		Hot-Mix Asphalt – Transportation	April 1, 2008	
80109		Impact Attenuators	Nov. 1, 2003	Nov. 1, 2008
80110		Impact Attenuators, Temporary	Nov. 1, 2003	Jan. 1, 2007
80252		Improved Subgrade	Jan. 1, 2010	
80230	195	X Liquidated Damages	April 1, 2009	
80196	196	X Mast Arm Assembly and Pole	Jan. 1, 2008	Jan. 1, 2009
80045		Material Transfer Device	June 15, 1999	Jan. 1, 2009
80203	198	X Metal Hardware Cast into Concrete	April 1, 2008	April 1, 2009

<u>File Name</u>	<u>Pg #</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80165		Moisture Cured Urethane Paint System	Nov. 1, 2006	Jan. 1, 2010
80238		Monthly Employment Report	April 1, 2009	Jan. 1, 2010
80253		Movable Traffic Barrier System	Jan. 1, 2010	
80082		Multilane Pavement Patching	Nov. 1, 2002	
80180		National Pollutant Discharge Elimination System / Erosion and Sediment Control Deficiency Deduction	April 1, 2007	Nov. 1, 2009
80208		Nighttime Work Zone Lighting	Nov. 1, 2008	
80182		Notification of Reduced Width	April 1, 2007	
80069		Organic Zinc-Rich Paint System	Nov. 1, 2001	Jan. 1, 2010
80216		Partial Exit Ramp Closure for Freeway/Expressway	Jan. 1, 2009	
80231	199	X Pavement Marking Removal	April 1, 2009	
80254		Pavement Patching	Jan. 1, 2010	
80022	200	X Payments to Subcontractors	June 1, 2000	Jan. 1, 2006
80209	202	X Personal Protective Equipment	Nov. 1, 2008	
80232		Pipe Culverts	April 1, 2009	April 1, 2010
80119	203	X Polyurea Pavement Marking	April 1, 2004	Jan. 1, 2009
80210		Portland Cement Concrete Inlay or Overlay	Nov. 1, 2008	
80170	210	X Portland Cement Concrete Plants	Jan. 1, 2007	
80217		Post Clips for Extruded Aluminum Signs	Jan. 1, 2009	
80171		Precast Handling Holes	Jan. 1, 2007	
80218		Preventive Maintenance – Bituminous Surface Treatment	Jan. 1, 2009	April 1, 2009
80219		Preventive Maintenance – Cape Seal	Jan. 1, 2009	April 1, 2009
80220		Preventive Maintenance – Micro-Surfacing	Jan. 1, 2009	
80221		Preventive Maintenance – Slurry Seal	Jan. 1, 2009	
80211		Prismatic Curb Reflectors	Nov. 1, 2008	
80015	212	X Public Convenience and Safety	Jan. 1, 2000	
34261		Railroad Protective Liability Insurance	Dec. 1, 1986	Jan. 1, 2006
80157	213	X Railroad Protective Liability Insurance (5 and 10)	Jan. 1, 2006	
80247		Raised Reflective Pavement Markers	Nov. 1, 2009	April 1, 2010
80223		Ramp Closure for Freeway/Expressway	Jan. 1, 2009	
80172		Reclaimed Asphalt Pavement (RAP)	Jan. 1, 2007	Jan. 1, 2010
80183	215	X Reflective Sheeting on Channelizing Devices	April 1, 2007	Nov. 1, 2008
80206	216	X Reinforcement Bars – Storage and Protection	Aug. 1, 2008	April 1, 2009
80224		Restoring Bridge Approach Pavements Using High-Density Foam	Jan. 1, 2009	
80131		Seeding	July 1, 2004	July 1, 2010
80152		Self-Consolidating Concrete for Cast-In-Place Construction	Nov. 1, 2005	July 1, 2010
80132		Self-Consolidating Concrete for Precast Products	July 1, 2004	July 1, 2010
80127		Steel Cost Adjustment	April 2, 2004	April 1, 2009
80255		Stone Matrix Asphalt	Jan. 1, 2010	
80234		Storm Sewers	April 1, 2009	April 1, 2010
80143	217	X Subcontractor Mobilization Payments	April 2, 2005	
80075		Surface Testing of Pavements	April 1, 2002	Jan. 1, 2007
80087		Temporary Erosion Control	Nov. 1, 2002	July 1, 2010
80256		Temporary Longitudinal Traffic Barrier System	Jan. 1, 2010	
80225		Temporary Raised Pavement Marker	Jan. 1, 2009	
80176	218	X Thermoplastic Pavement Markings	Jan. 1, 2007	
80257		Traffic Barrier Terminal, Type 6	Jan. 1, 2010	
20338	220	X Training Special Provisions	Oct. 15, 1975	

<u>File Name</u>	<u>Pg #</u>	<u>Special Provision Title</u>	<u>Effective</u>	<u>Revised</u>
80258		Truck Mounted/Trailer Mounted Attenuators	Jan. 1, 2010	
80071	223	Working Days	Jan. 1, 2002	

The following special provisions have been deleted from use:

80244 Filter Fabric

The following special provisions are in the 2010 Supplemental Specifications and Recurring Special Provisions:

<u>File Name</u>	<u>Special Provision Title</u>	<u>New Location</u>	<u>Effective</u>	<u>Revised</u>
80193	Concrete Barrier	Section 637	Jan. 1, 2008	
80175	Epoxy Pavement Markings	Section 1095	Jan. 1, 2007	
80181	Hot-Mix Asphalt – Field Voids in the Mineral Aggregate	Section 1030	April 1, 2007	April 1, 2008
80136	Hot-Mix Asphalt Mixture IL-4.75	Sections 406, 1003, 1030, 1032 and 1102	Nov. 1, 2004	Jan. 1, 2008
80195	Hot-Mix Asphalt Mixture IL-9.5L	Sections 1004 and 1030	Jan. 1, 2008	
80129	Notched Wedge Longitudinal Joint	Section 406	July 1, 2004	Jan. 1, 2007
80235	Payrolls and Payroll Records	Check Sheets #1 and #5	Mar. 1, 2009	July 1, 2009
80134	Plastic Blockouts for Guardrail	Section 630	Nov. 1, 2004	Jan. 1, 2007
80151	Reinforcement Bars	Section 1006	Nov. 1, 2005	April 1, 2009
80184	Retroreflective Sheeting, Nonreflective Sheeting, and Translucent Overlay Film for Highway Signs	Sections 1090, 1091, 1092 and 1093	April 1, 2007	
80212	Sign Panels and Sign Panel Overlays	Supplemental	Nov. 1, 2008	
80197	Silt Filter Fence	Sections 1080 and 1081	Jan. 1, 2008	
80153	Steel Plate Beam Guardrail	Section 1006	Nov. 1, 2005	Aug. 1, 2007
80191	Stone Gradation Testing	Section 1005	Nov. 1, 2007	
80185	Type ZZ Retroreflective Sheeting, Nonreflective Sheeting, and Translucent Overlay Film for Highway Signs	Sections 1090, 1091, 1092 and 1093	April 1, 2007	
80149	Variable Spaced Tining	Section 420	Aug. 1, 2005	Jan. 1, 2007
80204	Woven Wire Fence	Section 1006	April 1, 2008	

The following special provisions require additional information from the designer. The additional information needs to be included in a separate document attached to this check sheet. The Project Development and Implementation section will then include the information in the applicable special provision. The Special Provisions are:

- Bridge Demolition Debris
- Building Removal-Case I
- Building Removal-Case II
- Building Removal-Case III
- Building Removal-Case IV
- Completion Date
- Completion Date Plus Working Days
- DBE Participation
- Material Transfer Device
- Railroad Protective Liability Insurance
- Training Special Provisions
- Working Days

## SPECIAL PROVISIONS

The following Special Provisions supplement the “Standard Specifications for Road and Bridge Construction”, Adopted January 1, 2007, 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 the fiber optic Ethernet based communications network to incorporate the traffic signals located in Highland Park , IL to the Lake County Passage system, and in case of conflict with any part , or parts, of said Specifications, the said Special Provisions shall take precedence and shall govern.

### Location of Project

The project is located on Various Routes in Highland Park in Lake County, Illinois.

### Description of Project

The project consists of the installation of a new fiber optic interconnect cable and modification of the existing traffic signals along Various routes in Highland Park to incorporate these traffic signals into the Ethernet based communication Lake County Passage system. The existing signalized intersections involved in this project and the associated modifications at each are as follows:

	INTERSECTION	MODIFICATION
1	Lake-Cook Road @ US 41 NB Ramp	Drill Handhole to install conduit and fiber optic cable.
2	Lake-Cook Road @ Turnbull Woods	Replace cabinet, Econolite controller, and service installation. Install UPS and Layer II switch.
3	Lake-Cook Road @Green Bay Road	Replace cabinet, Econolite controller, and service installation. Install UPS, remote

		controlled video system and Layer II switch.
4	Lake-Cook Road @ Sheridan Road	Replace Eagle controller, pedestrian signal heads, optically programmed signal heads, and pedestrian pushbuttons. Install UPS and Layer II switch,
5	Green Bay Road @ Clavey Road	Replace cabinet, Econolite controller and service installation. Rebuild handhole and modify controller foundation. Install UPS and Layer II switch.
6	Green Bay Road @ Roger Williams Avenue	Replace cabinet, Econolite controller and service installation. Rebuild handhole and modify controller foundation. Install UPS and Layer II switch.
7	Green Bay Road @ Edgewood Road	Replace Econolite controller. Install UPS and Layer II switch.
8	Green Bay Road @ Bob-O-Link Road	Complete Traffic Signal Modernization. Install Econolite controller, Radio Activated Solar Advance Flashing Beacon System, remote controlled video system, UPS and Layer II switch.
9	Green Bay Road @ Deerfield Road	Replace Eagle controller. Install UPS and Layer II switch.
10	Green Bay Road @ Laurel Avenue	Replace Eagle controller and service installation. Install Video Communications Cabinet, remote controlled video system, media converters, Layer III switch, and Layer III fiber optic transceiver module, SFP type, long distance.
11	Green Bay Road @ Central Avenue	Replace Eagle controller. Install remote controlled video system, UPS, and Layer II switch.
12	Green Bay Road @ Renaissance Garage	Replace Eagle controller. Install UPS and Layer II switch.
13	Green Bay Road @ Elm Place	Replace Eagle controller. Install remote controlled video system, UPS, and Layer II switch.
14	Green Bay Road @ Park Avenue West	Replace Eagle controller and service installation. Install remote controlled video system, UPS and Layer II switch.
15	Green Bay Road @ Vine Avenue	Replace cabinet, Econolite controller, and service installation. Install UPS and Layer II switch.
16	Central Avenue @ Hickory Street	Replace Eagle controller and service installation. Install remote controlled video system, UPS and Layer II switch.
17	Central Avenue @ Sunset Road	Replace cabinet, Eagle controller, and service installation. Install UPS and Layer II switch.

18	Central Avenue @ Deerfield Road	Replace cabinet, Eagle controller, and service installation. Install UPS, remote controlled video system and Layer II switch.
19	Central Avenue @ Beverley Place	Replace cabinet, Eagle controller, and service installation. Install UPS, remote controlled video system and Layer II switch.
20	Laurel Avenue @ St. Johns Avenue	Replace Econolite controller. Install UPS, remote controlled video system and Layer II switch.
21	Laurel Avenue @ First Street	Replace Econolite controller. Install UPS, remote controlled video system and Layer II switch.
22	Laurel Avenue @ Hickory Street	Replace cabinet, Econolite controller, and service installation. Install UPS, remote controlled video system and Layer II switch.
23	Deerfield Road @ Jewel Access	Replace cabinet, Econolite controller, and service installation. Install UPS and Layer II switch.
24	Deerfield Road @ Richfield Road	Replace Econolite controller. Install UPS, remote controlled video system and Layer II switch.
25	Deerfield Road @ Ridge Road	Replace cabinet, Econolite controller, and service installation. Install UPS, remote controlled video system and Layer II switch.
26	Park Avenue West @ Highland Park Hospital	Upgrade existing Eagle controller software. Install UPS, remote controlled video system, and Layer II switch.
27	Park Avenue West @ Byerly Drive	Drill Handhole to install conduit and fiber optic cable.

The work will also include the installation of camera mounting assemblies, fiber optic cable terminations, fiber optic cable splices, Layer III fiber optic transceiver module, GBIC type, long distance, conduit, junction boxes, fiber optic cable, and tracer cable, and all other incidental and collateral work necessary to complete the project as shown on the plans and described herein.

## **Traffic Signal Maintenance Responsibilities**

### **Cook County Highway Department**

The intersection of Lake-Cook Road and US 41 Northbound Ramp is maintained by the Cook County Highway Department.

All work at this intersection shall be performed in accordance with the Cook County Traffic Signal Special Provisions. A permit is required to be issued by Cook County prior to the start of construction at any of the Cook County intersections. The Contractor shall be responsible for obtaining the required permit, including all applications, fees and bonds. No additional compensation will be granted for the cost of any application fees, permit fees or bond requirements imposed by Cook County.

### **Illinois Department of Transportation**

The following intersections are maintained by the Illinois Department of Transportation:

Lake-Cook Road at Sheridan Road  
US 41 at Park Avenue West  
US 41 at IL 22

All work at these intersections including maintenance transfers, shall be performed in accordance with the IDOT District One Traffic Signal Special Provisions coordinated through the IDOT North Area Traffic Signal Engineer at 847-705-4425.

### **City of Highland Park**

The following intersections are maintained by the City of Highland Park:

Lake Cook Road & Turnbull Woods  
Park Avenue West at Byerly Drive  
Lake Cook Road & Green Bay Road  
Green Bay Road & Clavey Road  
Green Bay Road & Roger Williams Avenue

Green Bay Road & Edgewood Road  
Green Bay Road & Bob-O-Link Road  
Green Bay Road & Deerfield Road  
Green Bay Road & Laurel Avenue  
Green Bay Road & Central Avenue  
Green Bay Road & Renaissance Garage  
Green Bay Road & Elm Place  
Green Bay Road & Park Avenue West  
Green Bay Road & Vine Avenue  
Central Avenue & Hickory Street  
Central Avenue & Sunset Road  
Central Avenue & Deerfield Road  
Central Avenue & Beverly Place  
Laurel Avenue & St. Johns Avenue  
Laurel Avenue & First Street  
Laurel Avenue & Hickory Street  
Deerfield Road & Jewel Access  
Deerfield Road & Richfield Road  
Deerfield Road & Ridge Road

All work at the Highland Park Police Station and at these intersections, including maintenance transfers, shall be coordinated through the City of Highland Park, Department of Public Works at 847-926-1139.

**STATUS OF UTILITIES TO BE ADJUSTED**

Effective: January 30, 1987

Revised: July 1, 1994

Utility companies involved in this project have provided the following estimated dates:

<u>Name of Utility</u>	<u>Type</u>	<u>Location</u>	<u>Estimated Dates for Start and Completion of Relocation or Adjustments</u>
A T & T 1000 Commerce Drive Oak Brook, IL 60523	N/A	N/A	No utility adjustments or relocations anticipated as part of this project.
ComEd 1600 Franklin Blvd Libertyville, IL 60048	N/A	N/A	No utility adjustments or relocations anticipated as part of this project.
Comcast 688 Industrial Drive Elmhurst, IL 660126	N/A	N/A	No utility adjustments or relocations anticipated as part of this project.
North Shore Gas 130 East Randolph Chicago, IL 60601	N/A	N/A	No utility adjustments or relocations anticipated as part of this project.

The above represents the best information available to the Department and is included for the convenience of the bidder. The applicable portions of Articles 105.07 and 107.31 of the Standard Specifications shall apply.

**Traffic Control Plan (L.C.-T- Section 700), Effective 03/01/2008**

Traffic Control shall be in accordance with the applicable sections of the "Standard Specifications", the "Supplemental Specifications", the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways, Millennium Edition", the "Quality Standard for Work Zone Traffic Control Devices", any special details and Highway Standards contained in the plans and the special provisions contained herein.

Special attention is called to Articles 105.05, and 107.09, and to Sections 701, 704, and 782 of the "Standard Specifications", and to the following Highway Standards, Details, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

The Contractor shall contact the Engineer at least 72 hours in advance of beginning work.

**STANDARDS**

701001 701101 701006 701301 701501 701701 701801 701901 702001  
780001

**DETAILS**

LC7000 LC7001 LC7002 LC7003 LC7004 LC7200 LC7201 LC7800  
LC7802

**RECURRING SPECIAL PROVISIONS**

FLAGGER AT SIDE ROADS AND ENTRANCES  
IMPACT ATTENUATORS, TEMPORARY  
PAVEMENT MARKING REMOVAL  
REFLECTIVE SHEETING ON CHANNELIZING DEVICES  
THERMOPLASTIC PAVEMENT MARKINGS  
TEMPORARY INFORMATION SIGNING  
PERSONAL PROTECTIVE EQUIPMENT

**DETOURS**

Detours and Road Closures on County Maintained Roads within Lake County, Illinois shall be in accordance with the applicable sections of the "Standard Specifications", the "Supplemental Specifications", the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", the

Lake County Division of Transportation's Detour Procedures and Guidelines, any special details and Highway Standards contained in the Detour Plan and the Special Provisions contained herein. The LCDOT's Detour Procedures and Guidelines are available from the LCDOT, Traffic Engineering Section upon request.

**Traffic Control and Protection (L.C.-T- Section 700), Effective 03/01/2008**

The Traffic Control and Protection shall meet the requirements of Division 700. Work Zone Traffic Control and Protection, Signing and Pavement Marking of the "Standard Specifications" except as follows:

**Article 701.01 Description** shall be replaced with the following:

**701.01 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 the construction or maintenance of this improvement.

Traffic Control and Protection shall be provided as called for in the plans, these special provisions, applicable Highway Standards, applicable sections of the "Standard Specifications", or as directed by the Engineer.

The governing factor in the execution and staging of work for this project is to provide the motoring public with the safest possible travel conditions along the roadway through the construction zone. The Contractor shall arrange his/her operations to keep the closing of any lane of the roadway to a minimum.

Traffic control devices include signs and their supports, signals, pavement markings, barricades and their approved weights, channeling devices, warning lights, arrow boards, flaggers, or any other device used for the purpose of regulating, detouring, warning or guiding traffic through or around the construction zone.

**Article 701.04 General shall be modified by adding the following section.**

The Contractor is required to conduct routine inspections of the work site at a frequency that will allow for the timely replacement of any traffic control device that has become displaced, worn or damaged to the extent that it no longer conforms to the shape, dimensions, color and operational requirements of the MUTCD, the Traffic Control Standards or will no longer present a neat appearance to motorists. A sufficient quantity of replacement devices, based on vulnerability to damage, shall be readily available to meet this requirement.

The Contractor shall be responsible for the proper location, installation and arrangement of all traffic control devices. Special attention shall be given to advance warning signs during construction operations, in order to keep lane assignments consistent with barricade placement at all times.

The Contractor shall immediately remove, cover or turn from the view of motorists all traffic control devices which are inconsistent with the detour, lane assignment patterns or conflicting conditions created during the transition from one construction stage to another. When the Contractor elects to cover conflicting or inappropriate signing, the materials used shall totally block out the reflectivity of the sign and shall cover the entire sign. The method used for covering the signing shall meet with the approval of the Engineer.

The Contractor shall coordinate all traffic control work on this project with any adjoining or overlapping projects. The coordination will include any barricade placements necessary to provide a uniform traffic detour pattern. When directed by the Engineer, the Contractor shall remove all traffic control devices that he/she furnished, installed and maintained under the contract. Such devices shall remain the property of the Contractor. All traffic control devices shall remain in place until the Engineer specifically authorizes their relocation or removal.

The Contractor shall ensure that all the traffic control devices he/she installs are operational, functional and effective 24 hours a day, 7 days a week, including holidays.

**Article 701.04 General** shall be further modified by adding the following sections:

**Public Safety and Convenience:**

The Contractor shall provide a telephone number for a responsible individual who can be contacted 24 hours a day, 7 days a week, to receive notification of any deficiencies in traffic control and protection. The Contractor shall dispatch men, materials, and equipment to correct any such deficiencies. The Contractor shall respond to any call from LCDOT concerning any request for improving or correcting traffic control devices and begin making the requested repairs within two (2) hours from the time of notification.

Personal vehicles shall not park within the right-of-way except in specific areas designated by the Engineer. All roads shall remain open to traffic. The Contractor may close one lane on two lane roads, because of construction, between the hours of 9:00 AM and 3:00 PM only. The Contractor shall maintain one-way traffic during these restricted hours with the use of signs and flagmen as shown on the Traffic Control Standards. Two lanes of traffic will be maintained between the hours of 3:00 PM and 9:00 AM and when no construction activities are being carried out.

The restricted lane closure time may be adjusted by the Engineer.

The Contractor shall provide a start and end time and a procedure plan 48 hours prior to the lane(s) to be closed. The Engineer shall notify the Contractor of his decision 24 hours in advance of the proposed lane closure. If the Contractor fails to provide notification or disregards the decision of the Engineer, the Traffic Control Deficiency Charge will be applied as stated in this special provision.

The Contractor shall maintain at least one lane in each direction on roads with four or more lanes. The Contractor shall also maintain entrances and side roads along the

proposed improvement. Interference with traffic movements and inconvenience to owners of abutting property and the public shall be kept to a minimum. Any delays or inconveniences incurred by the Contractor while complying with these requirements shall be considered incidental to the contract, and no additional compensation will be allowed.

On two lane roads, the Contractor will plan his/her work so that there will be no open holes or obstructions in the pavement and so that all barricades will be removed from the pavement during non-work hours.

On highways with four or more lanes, the Contractor will plan his/her work so that there shall be no open holes or obstructions in the pavement being used by the traveling public. Lane closures, if allowed, will be in accordance with the applicable standards, staging details shown in the plans and any other applicable contract documents.

The Contractor shall remove all equipment from the shoulders and medians after work hours.

The Contractor shall not institute any road closures or restrictions except those covered by the plans and specifications of this contract without written approval from the Engineer.

#### Traffic Control Deficiency Charge:

The primary concern of LCDOT is to maintain a safe travel way for the public and a safe environment for the worker in the construction zone. The Contractor is expected to comply with the "Standard Specifications", contract plans, these special provisions, and directions from the Engineer concerning traffic control and protection. The Contractor shall provide a telephone number for a responsible individual who can be contacted 24 hours a day, 7 days a week, to receive notification of any deficiencies in the traffic control and protection.

When the Engineer is notified or determines a traffic control

deficiency exists, the Engineer will notify and direct the Contractor to correct the deficiency within a specified time. The specified time, which begins upon notification to the Contractor, will be ½ (one half) hour to 8 (eight) hours based upon the urgency of the situation and the nature of the deficiency. The Engineer will be the sole judge. The deficiency may be any lack of repair, maintenance of, or non-compliance with the traffic control plan.

If the Contractor fails to correct the deficiency within the specified time, a traffic control deficiency shall be imposed for each calendar day or fraction thereof the deficiency exists. The calendar day(s) will begin with the notification and end with the Engineer's acceptance of the correction. The traffic control deficiency charge shall be for the full amount per day for each day the deficiency existed. The daily monetary deduction per deficiency shall be either \$1,000.00 or 0.05 of one percent of the awarded contract value, whichever is greater.

In addition, if the Contractor fails to respond, the Engineer may correct the deficiency and the cost thereof shall be deducted from the cost of the contract. The charge shall be separate and in addition to the traffic control deficiency deduction.

The Contractor shall not be relieved of any contractual responsibilities by LCDOT's action.

**Article 701.14 Signs** shall be modified by revising the first paragraph to read as follows:

When the work operations exceed four days, all signs shall be post mounted unless the signs are located on the pavement, paved median, other impervious surface, or define a moving or intermittent operation. When approved by the Engineer, a temporary sign stand may be used to support a sign at 5 feet minimum height where posts are impractical. Longitudinal dimensions shown on the plans for the placement of signs may be increased up to 100 feet to avoid obstacles, hazards or to improve sight distance, when approved by the Engineer. "ROAD WORK AHEAD" signs shall also be required on all side streets within the limits of the mainline "ROAD WORK AHEAD" signs."

Construction signs referring to daytime lane closures during

working hours shall be removed, covered, or turned away from the view of motorists during non-working hours. Upon request, prior to the beginning of construction operations the Contractor will be provided a sign log of all existing signs within the limits of the construction zone. The Contractor is responsible for verifying the accuracy of the sign log. The Contractor shall maintain all existing traffic signs throughout the duration of the project.

All provisions of Article 107.25 of the "Standard Specifications" shall apply except the third paragraph shall be revised to read: The Contractor shall maintain, furnish and replace at his own expense, any traffic sign or post which has been damaged or lost by the Contractor or a third party. The Contractor will not be held liable for third party damage to large freeway guide signs.

**Article 701.14 Signs** (b) Work Zone Speed Limit Signs shall be revised to read:

- (b) Work Zone Speed Limit Signs. The Lake County Division of Transportation's Engineering Department will specify whether a project meets the criteria for a Work Zone Speed Limit. When specified, the work zone speed limit signs shall be installed as shown on the LCDOT Typical Work Zone Speed Limit Installation guideline sheets, at a maximum of 20 feet lateral distance of the locations shown on the plans. Failure to install the required amount of signs at the proper sign spacing shall result in an immediate traffic control deficiency. These signs are required for the proper enforcement of the work zone speed limit.

All permanent "SPEED LIMIT" signs located within the work zone shall be removed or covered. If the speed limit sign is to be covered, it shall be done in a manner that no part of the legend shall be visible in any lighting condition. This work shall be completed by county forces only.

The work zone speed limit signs and the end work zone speed limit signs in advance of and at the end of the lane closure(s) shall be used for the duration of the closure(s).

The work zone speed limits signs within the lane closure(s) shall only be used when workers are present in the closed lane adjacent to traffic. The sign assemblies within the lane closure(s) will not be required when workers are located behind a concrete barrier wall.

**Article 701.14 Signs** shall be modified by adding the following section (c),

- (c) Temporary Construction Information Signs. When indicated in the traffic control plan or as directed by the Engineer the Contractor shall furnish, install, maintain, relocate, and remove for various stages of construction Temporary Construction Information Signs. These signs shall include all Temporary Construction Information Signs needed by the road users to proceed safely through the work zone.

The following signs are considered Temporary Construction Information Signs:

Entrance	White	Legend	on	Green
Background				
Warning-New Lanes Open	Black	Legend	on	Orange
Background				

**FULL-ACTUATED CONTROLLER IN EXISTING CABINET, SPECIAL**

This work shall consist of furnishing and installing the brand traffic actuated solid state digital controller, as specified on the plan sheets and listed below, in the existing cabinet, meeting the requirements of the Standard Specifications Section 857. The controller shall be Ethernet-ready. Incidental to the installation of the controller shall be the transfer of all the existing controller data to maintain the coordinated operation of any existing system timings.

The controller shall be the latest model available that is compatible with "icons" software (NTCIP), currently in use by LCDOT, and shall be NEMA TS2 Type 1 compatible, unless specified otherwise on the plans. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. The controller shall be equipped with an Ethernet port and a removable data key to save the controller database. Only controllers supplied by approved District 1 closed-loop equipment manufacturers will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer. The traffic signal controller shall provide features to inhibit simultaneous display of circular yellow and yellow arrow indications.

<b>Intersection</b>	<b>Brand</b>
Lake-Cook Road & Sheridan Road	Eagle
Green Bay Road & Edgewood Road	Econolite
Green Bay Road & Deerfield Road	Eagle
Green Bay Road & Laurel Avenue	Eagle
Green Bay Road & Central Avenue	Eagle
Green Bay Road & Renaissance Garage	Eagle
Green Bay Road & Elm Place	Eagle
Green Bay Road & Park Avenue West	Eagle
Central Avenue & Hickory Street	Eagle
Laurel Avenue & St. Johns Avenue	Econolite
Laurel Avenue & First Street	Econolite
Deerfield Road & Richfield Road	Econolite

Basis of Payment: This work shall be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER IN EXISTING CABINET, SPECIAL, which shall be payment in full for furnishing and installing an Ethernet-ready controller with necessary connections for proper operation to the satisfaction of the Engineer.

## **FULL-ACTUATED CONTROLLER AND CABINET, SPECIAL**

This work shall consist of furnishing and installing the brand traffic actuated solid state digital controller, as specified on the plan sheets and listed below, in the controller cabinet of the type specified, meeting the requirements of the Standard Specifications Section 857. The controller, conflict monitor and all cabinet components shall be Ethernet-ready. Incidental to the installation of the controller shall be the transfer of all the existing controller data to maintain the coordinated operation of the system.

The controller shall be the latest model available that is compatible with "icons" software (NTCIP), currently in use by LCDOT, and shall be NEMA TS2 Type 1 compatible, unless specified otherwise on the plans. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. The controller shall be equipped with an Ethernet port and a removable data key to save the controller database. Only controllers supplied by approved District 1 closed-loop equipment manufacturers will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer. The traffic signal controller shall provide features to inhibit simultaneous display of circular yellow and yellow arrow indications.

The controller cabinet must meet Article 1074.03 with the following additions:

- 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) (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 – Plug-in type EDCO SHA-1250 or Atlantic/Pacific approved equal.
- (b) (8) BIU – Containment screw required.
- (b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.
- (b) (10) Switch Guards – All switches shall be guarded.
- (b) (11) Heating – Two (2) porcelain light receptacles with cage protection controlled by both a wall switch and a thermostat or a thermostatically controlled 150 watt strip heater.
- (b) (12) Plan & Wiring Diagrams – 12" x 16" (3.05mm x 4.06mm) moisture sealed container attached to door.
- (b) (13) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.

- (b) (14) Field Wiring Labels – All field wiring shall be labeled.
- (b) (15) Field Wiring Termination – Approved channel lugs required.
- (b) (16) Power Panel – Provide a nonconductive shield.
- (b) (17) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.
- (b) (18) Police Door – Provide wiring and termination for plug in manual phase advance switch.
- (b) (19) Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or equivalent.

<b>Intersection</b>	<b>Brand</b>
Lake Cook Road & Turnbull Woods	Econolite
Lake Cook Road & Green Bay Road	Econolite
Green Bay Road & Clavey Road	Econolite
Green Bay Road & Roger Williams Avenue	Econolite
Green Bay Road & Bob-O--Link Road	Econolite
Green Bay Road & Vine Avenue	Econolite
Central Avenue & Sunset Road	Eagle
Central Avenue & Deerfield Road	Eagle
Central Avenue & Beverly Place	Eagle
Laurel Avenue & Hickory Street	Econolite
Deerfield Road & Jewel Access	Econolite
Deerfield Road & Ridge Road	Econolite

Basis of Payment: This work shall be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL, which shall be payment in full for furnishing and installing an Ethernet-ready controller, conflict monitor, and cabinet complete including load switches and flasher relays, with necessary connections for proper operation.

**MODIFY EXISTING CONTROLLER CABINET**

This work shall be in accordance with Section 895 of the Standard Specifications and shall include all modifications and peripheral work necessary to accommodate the relocation of the EVP phasing unit, UPS unit, Layer II Switch, or remote controller video system items to be installed in the existing cabinets at the intersection. All necessary materials, parts and labor required for modifying the controller cabinet to accommodate the EVP phasing unit, Layer II switch, UPS unit, or remote controller video system items to be installed in the existing cabinets at the intersection shall be considered included in the cost of this pay item.

Basis of Payment: This work will be paid for at the contract unit price each for MODIFY EXISTING CONTROLLER CABINET, which price shall be payment in full for furnishing all materials, parts and labor to modify the existing controller cabinet and associated equipment necessary for proper operation to the satisfaction of the Engineer.

**STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL)**  
**STEEL COMBINATION MAST ARM ASSEMBLY AND POLE (SPECIAL)**  
**STEEL MAST ARM ASSEMBLY AND POLE WITH DUAL MAST ARMS (SPECIAL)**  
**TRAFFIC SIGNAL POST (SPECIAL)**

This special provision shall apply to the items installed at the intersection of Green Bay Road and Bob-O-Link Road.

Revise Article 877.01 of the Standard Specifications to read:

Description.

This work shall consist of furnishing and installing a steel mast arm and assembly and a galvanized steel or extruded aluminum shroud for protection of the base plate.

Revise Article 877.03 of the Standard Specifications:

Mast arm assembly and pole shall be as follows.

- (a) Steel Mast Arm Assembly and Pole and Steel Combination Mast Arm Assembly and Pole. The steel mast arm assembly and pole and steel combination mast arm assembly and pole shall consist of a traffic signal mast arm, a luminaire mast arm or davit (for combination pole only), a pole, and a base, together with anchor rods and other appurtenances. The configuration of the mast arm assembly, pole, and base shall be according to the details shown on the plans.
  - (1) Loading. The mast arm assembly and pole, and combination mast arm assembly and pole shall be designed for the loading shown on the Highway Standards or elsewhere on the plans, whichever is greater. The design shall be according to AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 1994 Edition for 80 mph (130 km/hr) wind velocity. However, the arm-to-pole connection for tapered signal and luminaire arms shall be according to the "ring plate" detail as shown in Figure 11-1(f) of the 2002 Interim, to the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 2001 4th Edition.
  - (2) Structural Steel Grade. The mast arm and pole shall be fabricated according to ASTM A 595, Grade A or B, ASTM A 572 Grade 55, or ASTM A 1011 Grade 55 HSLAS Class 2. The base and flange plates shall be of structural steel according to AASHTO M 270 Grade 50 (M 270M Grade 345). Luminaire arms and trussed arms 15 ft (4.5 m) or less shall be fabricated from one steel pipe or tube size according to ASTM A 53 Grade B or ASTM A 500 Grade B or C. All mast arm assemblies, poles, and bases shall be galvanized according to AASHTO M 111.
  - (3) Fabrication. The design and fabrication of the mast arm assembly, pole, and base shall be according to the requirements of the Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals published

by AASHTO. The mast arm and pole may be of single length or sectional design. If section design is used, the overlap shall be at least 150 percent of the maximum diameter of the overlapping section and shall be assembled in the factory.

The manufacturer will be allowed to slot the base plate in which other bolt circles may fit, providing that these slots do not offset the integrity of the pole. Circumferential welds of tapered arms and poles to base plates shall be full penetration welds.

- (4) Shop Drawing Approval. The Contractor shall submit detailed drawings showing design materials, thickness of sections, weld sizes, and anchor rods to the Engineer for approval prior to fabrication. These drawings shall be at least 11 x 17 in. (275 x 425 mm) in size and of adequate quality for microfilming.
- (b) Anchor Rods. The anchor rods shall be ASTM F 1554 Grade 105, coated by the hot-dip galvanizing process according to AASHTO M 232, and shall be threaded a minimum of 7 1/2 in. (185 mm) at one end and have a bend at the other end. The first 12 in. (300 mm) at the threaded end shall be galvanized. Two nuts, one lock washer, and one flat washer shall be furnished with each anchor rod. All nuts and washers shall be galvanized.
- (c) The galvanized steel or extruded aluminum shroud shall have dimensions similar to those detailed in the "District One Standard Traffic Signal Design Details." The shroud shall be installed such that it allow air to circulate throughout the mast arm but not allow infestation of insects or other animals, and such that it is not hazardous to probing fingers and feet.

Add the following to Article 877.04 of the Standard Specifications:

The shroud shall not be paid for separately but shall be included in the cost of the mast arm assembly and pole.

All galvanized and aluminum exterior surfaces shall be powder coated with chip resistive epoxy resin primer applied via electrostatic spray equipment. The primer shall be #66 Series, Botany Beige, as manufactured by Tnemec Company, Inc. of Kansas City, MO (primer No. F066YB15.9).

The top coat shall be Park Brown Endur Shield (Paint No. F073D0111A), as manufactured by Tnemec Company, Inc. of Kansas City, MO.

All work associated with applying the powder coated finish shall be performed at the manufacturing facility for the pole assembly or post or at a powder coating 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.

Powder Coated 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 °F for a minimum one (1) hour. The coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400 °F.

The finish powder coated color shall be one of the manufacturer's standard colors and shall be as selected by the local agency responsible for powder coating 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 or powder coating 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 manufacturer's facility shall be repaired to the satisfaction of the Engineer using a method recommended by the manufacturer and approved by the Engineer. If while at the manufacturer'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 powder coating manufacturer's standard warranty and certification that the powder coating system has been properly applied.

Packaging.

Prior to shipping, the poles and posts shall be wrapped in ultraviolet-inhibiting plastic foam or rubberized foam.

**TRAFFIC SIGNAL POST.**

Add the following to Article 1077.01 (b) of the Standard Specifications:

All posts and bases shall be steel and hot dipped galvanized.

Basis of Payment: This work shall be paid for at the contract unit price each for STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL), STEEL COMBINATION MAST ASSEMBLY AND POLE (SPECIAL), STEEL MAST ARM AND POLE WITH DUAL MAST ARMS (SPECIAL), and TRAFFIC SIGNAL POST (SPECIAL) of the type specified, which shall be payment in full for furnishing and installing the type and length specified.

## **PEDESTRIAN PUSH-BUTTON, SPECIAL**

This special provision shall govern the installation of this item at the intersection of Green Bay Road at Bob-O-Link Road.

This work shall consist of providing and installing a pedestrian pushbutton assembly and hardware which is to be powder coated "Park Brown" in color meeting the requirements as listed below:

Revise Article 1074.02 of the Standard Specifications to read:

- (a) General. Push-button assemblies shall be ADA compliant, highly vandal resistant, be pressure activated with minimal movement and cannot be stuck in a closed or constant call position. A red latching LED and audible tone shall be provided for confirmation of an actuation call.
- (b) Latching LED. The normal state of the LED shall be off. When the push button is pressure activated, the LED shall be lighted and remain on until the beginning of the walk phase. The latching relay shall be mounted in the signal cabinet, controlling two pedestrian phases.
- (b) Housing. The push-button housing shall be solid 6061 aluminum and powder coated yellow, unless otherwise noted on the plans.
- (c) Actuator. The actuator shall be stainless steel with a solid state electronic Piezo switch rated for a minimum of 20 million cycles with no moving plunger or moving electrical contacts. The operating voltage shall be 12-24 V AC/DC.
- (d) Pedestrian Station. Stations shall be designed to be mounted directly to a post, mast arm pole or wood pole. The station shall be aluminum and will accept a 3-inch round push button assembly and a 9 X 12-inch R10-3e sign with arrow(s) for a count-down pedestrian signal. The pedestrian station size without count-down pedestrian signals shall accommodate a 5 X 7 ¾ -inch R10-3b or R10-3d sign with arrow(s).
- (e) Location. Pedestrian push buttons and stations shall be mounted on poles and/or posts as shown on the plans and shall be fully accessible from a paved or concrete surface. See the District's Detail sheets for orientation and mounting details.

All galvanized and aluminum exterior surfaces shall be powder coated with chip resistive epoxy resin primer applied via electrostatic spray equipment. The primer shall be #66 Series, Botany Beige, as manufactured by Tnemec Company, Inc. of Kansas City, MO (primer No. F066YB15.9).

The top coat shall be Park Brown Endur Shield (Paint No. F073D0111A), as manufactured by Tnemec Company, Inc. of Kansas City, MO.

All work associated with applying the powder coated finish shall be performed at the manufacturing facility for the pole assembly or post or at a powder coating facility

approved by the Engineer. Traffic signal mast arm shrouds and post bases shall also be painted the same color as the pole assemblies and posts.

Surface Preparation.

All weld flux and other contaminants shall be mechanically removed. The pedestrian pushbutton assemblies and hardware shall be degreased, cleaned, and air dried to assure all moisture is removed.

Powder Coated 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 °F for a minimum one (1) hour. The coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400 °F.

The finish powder coated color shall be one of the manufacturer's standard colors and shall be as selected by the local agency responsible for powder coating 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 or powder coating 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 manufacturer's facility shall be repaired to the satisfaction of the Engineer using a method recommended by the manufacturer and approved by the Engineer. If while at the manufacturer'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 powder coating manufacturer's standard warranty and certification that the powder coating 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 PEDESTRIAN PUSHBUTTON, SPECIAL which shall include all necessary mounting hardware, labor, and incidentals necessary.

## **RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM.**

### Description.

This work shall consist of re-optimizing a closed loop traffic signal system according to the following Levels of work.

LEVEL I applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system. The purpose of this work is to integrate the improvements to the subject intersection into the signal system while minimizing the impacts to the existing system operation. This type of work would be commonly associated with the addition of signal phases, pedestrian phases, or improvements that do not affect the capacity at an intersection.

LEVEL II applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system and detailed analysis of the intersection operation is desired by the engineer, or when a new signalized or existing signalized intersection is being added to an existing system, but optimization of the entire system is not required. The purpose of this work is to optimize the subject intersection, while integrating it into the existing signal system with limited impact to the system operations. This item also includes an evaluation of the overall system operation, including the traffic responsive program.

For the purposes of re-optimization work, an intersection shall include all traffic movements operated by the subject controller and cabinet.

After the signal improvements are completed, the signal shall be re-optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the Department, if available and as appropriate. The existing SCAT Report is available for review at the District One office and if the Consultant provides blank computer disks, copies of computer simulation files for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

- (a) LEVEL I Re-Optimization

1. The following tasks are associated with LEVEL I Re-Optimization.
  - a. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system.
  - b. Proposed signal timing plan for the new or modified intersection(s) shall be forwarded to IDOT for review prior to implementation.
  - c. Consultant shall conduct on-site implementation of the timings at the turn-on and make fine-tuning adjustments to the timings of the subject intersection in the field to alleviate observed adverse operating conditions and to enhance operations.
2. The following deliverables shall be provided for LEVEL I Re-Optimization.
  - a. Consultant shall furnish to IDOT a cover letter describing the extent of the re-optimization work performed.
  - b. Consultant shall furnish an updated intersection graphic display for the subject intersection to IDOT and to IDOT's Traffic Signal Maintenance Contractor.

(b) LEVEL II Re-Optimization

1. In addition to the requirements described in the LEVEL I Re-Optimization above, the following tasks are associated with LEVEL II Re-Optimization.
  - a. Traffic counts shall be taken at the subject intersection after the traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.
  - b. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
  - c. Traffic responsive program operation shall be evaluated to verify proper pattern selection and lack of oscillation and a report of the operation shall be provided to IDOT.
2. The following deliverables shall be provided for LEVEL II Re-Optimization.
  - a. Consultant shall furnish to IDOT one (1) copy of a technical memorandum for the optimized system. The technical memorandum shall include the following elements:
    - (1) Brief description of the project
    - (2) Printed copies of the analysis output from Synchro (or other appropriate, approved optimization software file)
    - (3) Printed copies of the traffic counts conducted at the subject intersection
  - b. Consultant shall furnish to IDOT two (2) CDs for the optimized system. The CDs shall include the following elements:
    - (1) Electronic copy of the technical memorandum in PDF format

- (2) Revised Synchro files (or other appropriate, approved optimization software file) including the new signal and the rest of the signals in the closed loop system
- (3) Traffic counts conducted at the subject intersection
- (4) New or updated intersection graphic display file for the subject intersection
- (5) The CD shall be labeled with the IDOT system number and master location, as well as the submittal date and the consultant logo. The CD case shall include a clearly readable label displaying the same information securely affixed to the side and front.

#### Basis of Payment.

This work shall be paid for at the contract unit price each for RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL I or RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL II, which price shall be payment in full for performing all work described herein per intersection. Following completion of the timings and submittal of specified deliverables, 100 percent of the bid price will be paid. Each intersection will be paid for separately.

#### **CAMERA MOUNTING ASSEMBLY, SPECIAL**

This work shall consist of modifying an existing traffic signal mast arm pole to accommodate an extension pole suitable for mounting a CCTV Camera. The pole extension shall be a 20-foot long, 4-inch diameter, Schedule 80 galvanized steel pipe and fastened to the existing mast arm pole with adjustable, galvanized steel clamps as indicated in the plans. The exposed wires shall be trained into a drip loop and protected with black plastic spiral cable wrap.

All galvanized steel exterior surfaces shall be coated with chip resistive epoxy resin primer applied via electrostatic spray equipment. The primer shall be #66 Series, Botany Beige, as manufactured by Tnemec Company, Inc. of Kansas City, MO (primer No. F066YB15.9).

The top coat shall be Park Brown Endur Shield (Paint No. F073D0111A), as manufactured by Themec Company, Inc. of Kansas City, MO.

All work associated with applying the powder coated finish shall be performed at the manufacturing facility for the pole assembly or post or at a powder coating facility approved by the Engineer.

#### Surface Preparation.

All weld flux and other contaminates shall be mechanically removed. The pole extension shall be degreased, cleaned, and air dried to assure all moisture is removed.

#### Powder Coated 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 °F for a minimum one (1) hour. The coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400 °F.

The finish powder coat color shall be one of the manufacturer's standard colors and shall be as selected by the local agency responsible for powder coating 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.

Any damage to the finish after leaving the manufacturer's facility shall be repaired to the satisfaction of the Engineer using a method recommended by the manufacturer and approved by the Engineer. If while at the manufacturer'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 powder coating manufacturer's standard warranty and certification that the powder coating 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 CAMERA MOUNTING ASSEMBLY, *SPECIAL* which shall include all necessary mounting hardware, labor, and incidentals necessary to securely fasten the assembly to an existing pole and placing the camera in operation to the satisfaction of the Engineer. The camera, cables, connectors, and related equipment shall be paid for separately as part of REMOTE-CONTROLLED VIDEO SYSTEM.

### **ELECTRIC CABLE IN CONDUIT, 4/C #20, VIDEO**

This work shall consist of furnishing and installing a Belden 5402 FE Cable or approved equal. No splices shall be allowed in the cable between the PTZ camera and the traffic signal cabinet.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, 4/C #20, VIDEO, which price shall be payment in full for furnishing the material, making all electrical connections and installing the cable complete, measured as specified herein.

**RADIO ACTIVATED SOLAR ADVANCE FLASHING BEACON SYSTEM  
(COMPLETE)**

This specification sets forth the minimum requirements for a radio activated solar flashing beacon system (complete) that will be solar powered and use local radios at the flasher units and a master radio located in the traffic signal cabinet. The master radio will communicate with the Lake County TMC through the use of an Ethernet module connected to the Layer II (Datalink) Switch.

System Components

- 1 Central Control and Scheduling Software
- 1 Ethernet Interface Module for Master Radio
- 1 Master Radio and Antenna
- 2 16 Foot Flasher Assembly Poles
- 2 Transformer Base
- 2 Helix Foundation
- 2 Solar Flasher Assembly Units

The Solar Flasher Assembly Units shall include the following:

- Local Radio and Antenna
- Control Panel
- Battery Bank
- Solar Array
- Cabinet Enclosure
- 2 Yellow LED, 12" Indications
- School Speed Limit 20 MPH When Flashing Sign

The Radio Activated Solar Advanced Flashing Beacons shall be installed at the location indicated on the plans.

The system control and scheduling data will be transmitted to the TMC over single mode fiber. The system control data and scheduling shall be compatible with the LCDOT TMC system and Ethernet switches. This can be directly through the *icons*® system through the use of specifically developed and supplied drivers or central control software from the manufacturer of the radio activated solar advance flashing beacon system.

Basis of Payment: This item will be paid for at the contract unit price each for RADIO ACTIVATED SOLAR ADVANCE FLASHING BEACON SYSTEM (COMPLETE), which price shall be payment in full for furnishing and installing the solar panels, solar control units, batteries, Signs, LED Flashers, poles, foundations, cabinets, radios, central control scheduling software and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

## **RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM, PHASING UNIT**

Effective: January 1, 2002  
Revised: January 1, 2007

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 to a new wiring harness which is to be factory wired 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 at the contract unit price each for **RELOCATE EXISTING EMERGENCY VEHICLE PRIORITY SYSTEM, PHASING UNIT.**

## **RAILROAD RIGHT OF WAY ENTRY PERMIT**

It is the contractor's responsibility to contact the Union Pacific Railroad to obtain the necessary Railroad Right of Way Entry Permit or the equivalent prior to starting any work within the Railroad R.O.W.

The Union Pacific Railroad has issued Consent letters for the two proposed conduit crossings. The respective folder numbers have been assigned:

Folder: 02598-59 Lake-Cook Road Crossing  
Folder: 02598-60 Old Deerfield Road Crossing

The Contractor shall provide the Resident Engineer with a copy of the Right of Entry Permit issued by the **Union Pacific** Railroad.

Basis of Payment: The costs for providing a Railroad Right of Entry Permit, as noted above, will be paid for at the contract unit price per Each for **RAILROAD RIGHT OF ENTRY PERMIT.**

## **MODIFY EXISTING TYPE "D" FOUNDATION**

Effective: January 1, 2002  
Modified: January 1, 2007

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. 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.

The removal of the existing traffic signal controller shall be included in this pay item, as well as the pulling and reinstalling of the existing cable 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 cabinet. The Contractor shall follow the recommendations of the manufacturer, subject to approval of the Engineer, in forming and constructing the foundation.

Provide a three (3) foot by four (4) foot wide P.C.C. apron sidewalk, five (5) inches thick, 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 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 TO DOUBLE HANDHOLE.**

This work shall consist of furnishing the materials and rebuilding an existing handhole to a double handhole at the locations shown in the plans. The work shall be done in accordance with Section 814 of the Standard Specifications for Road and Bridge Construction.

Basis of Payment: This work shall be paid for at the contract unit price each for **REBUILD EXISTING HANDHOLE TO DOUBLE HANDHOLE**, which price shall be payment in full for furnishing the materials for and rebuilding the double handhole including all labor and equipment to rebuild the double handhole.

**UPGRADE EXISTING CONTROLLER TO NTCIP (SPECIAL)**

This item shall comply with Section 857 of the "Standard Specifications for Road and Bridge Construction" and shall comply with the following requirements:

This work shall consist of upgrading an existing **EAGLE** Brand traffic signal controller to the manufacturer's latest version of National Transportation Communications for ITS Protocol (NTCIP) software, compatible with the Lake County PASSAGE central traffic signal management system.

Basis of Payment: This work shall be paid for at the contract unit price each for UPGRADE EXISTING CONTROLLER TO NTCIP (SPECIAL), which price shall be payment in full for upgrading the existing controller to meet the NTCIP standards and operating on the Lake County PASSAGE system to the satisfaction of the Engineer.

### **DETECTABLE WARNINGS**

Effective: February 13, 2007  
Revised: June 19, 2008

**Description:** This work shall consist of furnishing and installing detectable warnings in accessibility ramps.

**Materials:** *The detectable warnings shall be stainless steel panels of the sizes shown on the plans and shall be supplied from one of the following manufacturers, or an approved equal:*

1) *MetaDome,  
2136 E. Dayton Street  
Madison, WI 53704  
Phone # 608-249-8644  
<http://www.metadome.com/>*

*Product Name: MetaPanel*

*Required coating system:  
Meta-Coat II, Federal Yellow*

2) *Advantage Tactile Systems, Inc.  
System*

*241 Main Street  
Suite 100  
Buffalo, NY 14203  
Phone # 1-800-679-4022  
Fax # 1-800-679-4023*

*Product Name: Advantage Tactile*

*Required coating system:  
Diamond Tek, Federal Yellow*

*<http://www.advantagetactile.com/>*

*Supplier: RKD Construction  
11633 W. Grand Avenue  
Melrose Park, IL 60164*

**General:** Detectable warnings shall be according to Article 424.09 of the "Standard Specifications".

**Method of Measurement:** This work will be measured for payment in place installed, in square feet. *The concrete area under the detectable warnings will be measured for payment as portland cement concrete sidewalk of the thickness specified, with no deductions made for the detectable warnings panels located within the ramp.*

**Basis of Payment:** This work will be paid for at the contract unit price per square foot of DETECTABLE WARNINGS.

**EPOXY COATING ON REINFORCEMENT (DISTRICT ONE)**

Effective: January 1, 2007

For work outside the limits of bridge approach pavement, all references in the Highway Standards and Standard Specifications for reinforcement, dowel bars, tie bars and chair supports for pavement, shoulders, curb, gutter, combination curb and gutter and median shall be epoxy coated, unless noted on the plan.

**Temperature Control for concrete placement (District one)**

Effective: May 1, 2007

Delete the second and third sentences of the second paragraph of Article 1020.14(a) of the Standard Specifications.

## TRAFFIC SIGNAL SPECIAL PROVISIONS

**Effective: January 1, 2010**

All work and equipment performed and installed under this Contract:

County Highway Name:  
 County Highway Number:  
 County Highway Section:

shall be governed by and shall comply with:

<u>SPECIFICATION</u>	<u>ADOPTED/ DATED</u>
The State of Illinois <u>"Standard Specifications for Road and Bridge Construction"</u> referred to as "Standard Specifications"	Latest Edition
The State of Illinois "Manual on Uniform Traffic Control Devices for Streets and Highways," referred to as "MUTCD"	Latest Edition
The National Electrical Code referred to as "NEC"	Latest Edition
The National Electrical Manufacturers Association (All publications for traffic control items) referred to as "NEMA"	Latest Edition
The International Municipal Signal Association ("Official Wire & Cable Specifications Manual,") referred to as "IMSA"	Latest Edition
The Institute of Transportation Engineers Technical Report No. 1, (A Standard for Adjustable Face Vehicular Traffic Control Heads) referred to as "ITE"	Latest Edition
AASHTO "Standard Specifications" Structural Supports for Highway Signs, Luminaires, and Traffic Signals	Latest Edition
Supplemental Specifications and Recurring Special Provisions	Latest Edition

The following Traffic Signal Special Provisions supplement the above specifications, manuals, and codes. In case of conflict with any part or parts of said documents, these Special Provisions shall take precedence and shall govern.

The following terms and acronyms are used:

IDOT  
District 1  
LCDOT  
Engineer  
Traffic Engineer

Illinois Department of Transportation  
IDOT District 1  
The Lake County Division of Transportation  
The Resident Engineer  
The County Traffic Engineer – LCDOT

The construction, installation, modification and/or removal work shall be accomplished at the following intersection(s):

Lake-Cook Road & I-94 West Ramp  
Lake-Cook Road & I-94 East Ramp  
Lake-Cook Road & Wilmot  
Lake-Cook Road & Birchwood  
Lake-Cook Road & Pine  
Lake-Cook Road & Pfingsten  
Lake-Cook Road & Deer Lake  
Lake-Cook Road & LC Plaza  
Lake-Cook Road & IL 43  
Lake-Cook Road & Pine Tree  
Lake-Cook Road & Northbrook West  
Lake-Cook Road & Northbrook Center  
Lake-Cook Road & Northbrook East  
Lake-Cook Road & Lee  
Lake-Cook Road & Revere  
Lake-Cook Road & Skokie  
Lake-Cook Road & US 41 Southbound Ramp  
Lake-Cook Road & US 41 Northbound Ramp  
Lake Cook Road & Turnbull Woods  
Lake Cook Road & Green Bay Road  
Lake-Cook Road & Sheridan Road  
Green Bay Road & Clavey Road  
Green Bay Road & Roger Williams Avenue  
Green Bay Road & Edgewood Road  
Green Bay Road & Bob-O-Link Road  
Green Bay Road & Deerfield Road  
Green Bay Road & Laurel Avenue  
Green Bay Road & Central Avenue  
Green Bay Road & Renaissance Garage  
Green Bay Road & Elm Place  
Green Bay Road & Park Avenue West  
Green Bay Road & Vine Avenue  
Central Avenue & Beverley Place

Central Avenue & Deerfield Road  
Central Avenue & Sunset Road  
Central Avenue & Hickory Street  
Laurel Avenue & Hickory Street  
Laurel Avenue & First Street  
Laurel Avenue & St. Johns Avenue  
Deerfield Road & Ridge Road  
Deerfield Road & Richfield Road  
Deerfield Road & Jewel Access

US 41 & Park Avenue West  
US 41 & IL 22  
Park Avenue West & Byerly Drive  
Park Avenue West & Highland Park Hospital

The intent of this Special Provision is to prescribe the materials and construction methods commonly used in traffic signal installations. All material furnished shall be new. The locations and the details of all installations shall be indicated on the plans or as directed by the Engineer.

The work performed under this contract shall consist 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.

#### **MAST ARM SIGN PANELS**

Add the following to Article 720.02 of the "Standard Specifications":

Signs attached to poles or posts (such as mast arm signs) shall have mounting brackets and sign channels which are equal to and completely interchangeable with those used by LCDOT. All aluminum signs shall have a white reflectorized legend and border on a green reflectorized background, type AZ sheeting. The sign face shall not have any holes. 3M Scotch Joining Systems bonding tape or an approved equal shall be used in place of screws or rivets. The Signfix Aluminum Channel Framing System is currently recommended, but other brands of mounting hardware, or bonding tape may be acceptable based upon LCDOT approval.

#### **INSPECTION OF ELECTRICAL SYSTEMS**

Add the following to Article 802.01 of the "Standard Specifications":

All cabinets, including temporary traffic signal cabinets, shall be assembled by an approved equipment supplier in District One. LCDOT reserves the right to request that any controller and cabinet be tested at a District 1 approved equipment supplier's facility prior to field installation. Such testing will be at no extra cost to the contract. All permanent or temporary "railroad interconnected" controllers and cabinets, shall be

newly constructed, built, tested and approved by the controller equipment vendor, in the vendor's District 1 approved facility, prior to field installation. The vendor shall provide the technical equipment and assistance as required by the Engineer to fully test this equipment.

### **DAMAGE TO TRAFFIC SIGNAL SYSTEM**

Revise Article 802.02 of the "Standard Specifications" to read:

Any damaged equipment or equipment not operating properly from any cause whatsoever shall be repaired and/or replaced with new equipment provided by the Contractor at no additional cost to the Contract and/or owner of the traffic signal system, to the satisfaction of the Engineer. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection, otherwise the traffic signal installation will not be accepted. Cable splices outside the controller cabinet shall not be allowed.

### **INTERRUPTION OF COMMUNICATION**

The interruption of communication with County equipment shall be kept to an absolute minimum. This includes communication such as controller telemetry, video transmission, camera control signals, Highway Advisory Radio, wireless interconnect, telephone (POTS/ISDN/DSL), high speed Internet, or any other County communication signals. This provision applies to cable types including copper, multimode fiber optic, singlemode fiber optic, telephone cables, Internet cables, or any other cable used by the County to monitor and maintain its various signal and ITS equipment.

The contractor shall plan ahead, and shall stage his construction work accordingly, so that he can interrupt communication, and then restore communication, with as little down time as possible. For example, when a section of existing interconnect is being relocated, the new handholes and conduits should be installed prior to disconnecting the interconnect cable. The interconnect cable can then be disconnected, pulled out of the existing conduit, pulled through the new conduit, and re-connected. In addition, when an existing fiber optic cable is to be re-used, the contractor shall be prepared to immediately replace any fiber splices and/or terminations that become damaged.

Prior to disconnecting any LCDOT communication link, the contractor shall contact the Traffic Engineer for approval of his planned construction method.

### **RESTORATION OF WORK AREA**

Add to Section 802 of the "Standard Specifications":

Restoration of the traffic signal work area shall be incidental to the related pay item such as foundation, conduit, handhole, trench and backfill, etc. and no extra compensation shall be allowed. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be restored to match the previously existing conditions.

All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded, in accordance with Section 250 and 252 of the "Standard Specifications" respectively.

**SUBMITTALS.**

Revise Article 802.04 of the "Standard Specifications" to read:

The Contractor shall provide:

- a. 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 thirty (30) calendar days after the contract is awarded, or within fifteen (15) calendar days after the preconstruction meeting, whichever is earliest.
- b. Seven (7) copies of a letter listing the manufacturer's name and the model numbers of the proposed equipment. The Traffic Engineer will review the letter and determine whether the proposed equipment is approved for use. The copies will be stamped as "approved", "not approved", or "approved as corrected" and returned to the Contractor.
- c. Two (2) copies of material catalog cuts.
- d. Seven (7) copies of mast arm poles and assemblies drawings.
- e. The contract number or permit number, project location/limits and corresponding pay item number must be on each sheet of the letter, material catalog cuts and mast arm poles and assemblies drawings as required in items b, c and d.
- f. Exceptions, Deviations and Substitutions. In general, exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

**MAINTENANCE AND RESPONSIBILITY.**

Revise Article 802.07 of the "Standard Specifications" to read:

- a) Existing traffic signal installations and/or any electrical facilities at locations included in this contract may be altered or reconstructed totally or partially as part of the work on this contract. The Contractor is hereby advised that all traffic control equipment presently installed at these locations may be the property of the State of Illinois, Department of Transportation, Division of Highways, County, Private Developer, or the Municipality in which it is 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 pay item MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION, TEMPORARY TRAFFIC SIGNAL INSTALLATION, and/or MAINTENANCE OF EXISTING FLASHING BEACON INSTALLATION, shall become the full responsibility of the Contractor. The Contractor shall supply the Engineer and the County's Traffic Signal Maintenance Contractor a 24-hour emergency contact name and telephone

number. The Contractor shall provide sufficient qualified personnel to respond to all notifications of malfunctions on a round-the-clock basis (24 hours a day, 7 days a week). The Contractor is required to keep a time and date log of each response, from the time of the initial report to the time of final permanent repair.

- b) When the project has a pay item for MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION, TEMPORARY TRAFFIC SIGNAL INSTALLATION, and/or MAINTENANCE OF EXISTING FLASHING BEACON INSTALLATION, the Contractor must notify the Traffic Engineer at **(847) 377-7000** of their intent to begin any physical construction work on the project or any portion thereof. This notification must be a minimum of seven (7) working days prior to the start of construction to allow sufficient time for an inspection of the existing traffic signal installation(s) and the transfer of maintenance to the Contractor. If work is started prior to the inspection, maintenance of the traffic signal installation(s) will be immediately transferred to the Contractor without an inspection. The Contractor shall then 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 to or the replacement of damaged equipment must meet the approval of the Engineer at the time of final inspection or the traffic signal installation will not be accepted.
- c) Contracts that don't include traffic signal installations or modifications, but do include pay items for milling or pavement patching which may result in the destruction of traffic signal loops, do not require maintenance transfer. These contracts do require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Traffic Engineer at **(847) 377-7000**, at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection.
- d) The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most unavoidable down time. Any plan to shutdown the traffic signal installation for a period exceeding fifteen (15) minutes must receive prior approval from the Engineer. Approval to shutdown the traffic signal installation will only be granted during the hours of 9:00 A.M. to 3:00 P.M. on weekdays. Shutdowns will not be allowed during inclement weather, weekends or holiday periods.
- e) The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Division, the County's Traffic Signal Maintenance Contractor or the public, shall be investigated and repairs started. The Contractor shall restore service and complete permanent repairs in accordance with the following Repair Timetable. Failure to provide this service will result in liquidated damages of \$500 per day per occurrence. The Traffic Engineer reserves the right to assign any work not completed within this timeframe to the County's Traffic Signal Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Traffic Signal Maintenance Contractor within one month after the incident will result in

additional liquidated damages of \$500 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The County's Traffic Signal Maintenance Contractor may inspect any signaling device on the Division's highway system at any time without notification.

Unless specifically stated to the contrary, all items shall be repaired within the time frame described in the Repair Timetable. The times listed are noncumulative. Any repairs not specifically covered in the Repair Timetable, or described elsewhere, shall be completed within a time frame matching the most similar line item in the Repair Timetable.

**REPAIR TIMETABLE**  
 (non cumulative)

<u>ITEM</u>	<u>RESPONSE TIME</u>	<u>SERVICE RESTORATION</u>	<u>PERMANENT REPAIRS</u>
<b>KNOCKDOWNS/FAILURE/DAMAGE:</b>			
Cabinet	1 hr	24hrs	2 wks
Controller (Local or Master)	1 hr	24hrs	2 wks
Detector Loop	1 hr	n.a.	30 days
Detector Loop (Priority)	1 hr	n.a.	10 days
Loop Detector/Amplifier	1 hr	4 hrs	2 wks
MVP Sensor	1 hr	4 hrs	2 wks
PTZ Camera	1 hr	48 hrs	2 wks
Detector Interface Card/Mini Hub	1 hr	4 hrs	2 wks
Modem	1 hr	NWD	2 wks
Load Switch	1 hr	2 hrs	2 hrs
Signal Head/Lenses	1 hr	2 hrs	NWD
Pole/Mast Arm	1 hr	2 hrs	ENG
Cabling/Conduit	1 hr	4 hrs	ENG
Interconnect/Communication	1 hr	NWD	ENG
Graffiti/Advertising	NWD	NWD	NWD
Telemetry, Electrical	1 hr	2 hrs	NWD
Ethernet Switches/Video Encoders	1 hr	48 hrs	2 wks
Highway Advisory Radio (HAR)	1 hr	48 hrs	2 wks
Indicators/switches/LEDs/displays	NWD	n.a.	2 wks
Outages not covered elsewhere	1 hr	2 hrs	NWD
Filter/Cleanliness/fans/thermostat	NWD	NWD	n.a.
Misalignment (conflicting)	1 hr	2 hrs	NWD
Misalignment (non-conflicting)	48hrs	48hrs	1 wk
<b>COMPLAINTS/CALLS/ALARMS:</b>			
Timing/Phasing/Programming	1 hr	2 hrs	ENG
Coordination Alarm/Cycle Fail	NWD	ENG	ENG
Controller Alarm/Status Change	1 hr	NWD	1 wk
Detector Alarm/Status change	NWD	NWD	ENG
CMU Flash/Local Flash	1 hr	2 hrs	1 wk
Door Open/Maint. Req.	1 hr	2 hrs	NWD

LEGEND: hr=hour, hrs=hours, NWD=next working day, wk=week, wks=weeks,  
 ENG=acceptable to Engineer, days=calendar days, n.a.=not applicable

**TRAFFIC SIGNAL INSPECTION (TURN-ON).**

Revise Article 802.10 of the "Standard Specifications" to read:

It is LCDOT's intent to have all electric work completed and the equipment field-tested by the vendor, prior to LCDOT's "turn-on" field inspection. 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. In the event the Traffic Engineer determines that the work is not complete and that 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 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 Traffic Engineer at **(847) 377-7000** a minimum of seven (7) working days prior to the time of the requested inspection. LCDOT will not grant a field inspection until the Contractor provides notification that the equipment has been field tested, and the intersection is operating according to contract requirements. The LCDOT facsimile number is **(847) 984-5606**.

Signal indications being tested shall match the lane configurations and markings at the intersection. If any conflicting signal indications are visible to motorist or pedestrians while testing, the Contractor shall be responsible to provide police officer(s) to direct traffic. In addition, the Contractor shall provide a representative from the control equipment vendor's office to attend the traffic signal inspection for both permanent and temporary traffic signal "turn-ons".

Upon demonstration that the signals are operating properly and that all work has been completed in accordance with the contract and to the satisfaction of the Traffic Engineer, the Traffic 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 reassume the traffic signal maintenance upon successful completion of this inspection.

The Lake County Division of Transportation requires the following from the Contractor at Traffic Signal "turn-ons":

1. One (1) set of signal plans of record.
2. Notification from the Contractor and the equipment vendor that the equipment was satisfactorily field-tested.
3. A knowledgeable representative of the controller equipment supplier shall be present at the traffic signal "turn-on". The representative shall be knowledgeable concerning the cabinet design and the controller functions.
4. A copy of the approved material letter.
5. One (1) copy of the operation and service manuals for the signal controller and the associated control equipment.
6. Five (5) copies (11" x 17") of the cabinet wiring diagrams.
7. Five (5) copies of the traffic signal installation cable log.

Acceptance of the traffic signal equipment by LCDOT shall be based on the inspection results at the traffic signal "turn-on". If approved, the traffic signal acceptance shall be given verbally at the "turn-on" inspection, followed by written correspondence from the Traffic Engineer. The Contractor shall be responsible for all traffic signal equipment

and associated maintenance thereof until LCDOT acceptance is granted. Any "punch list" work remaining after the installation is accepted shall be completed within thirty (30) calendar days of the acceptance date. If this work is not completed within thirty days, LCDOT reserves the right to have the work completed by others at the Contractor's expense. This cost will be in addition to Liquidated Damages for Untimely Work.

The Contractor shall furnish all equipment and/or parts to keep the traffic signal installation operating.

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 will be subject to removal and disposal at the Contractor's expense.

#### **LIQUIDATED DAMAGES FOR UNTIMELY WORK**

A primary concern of LCDOT is to maintain a safe and efficient roadway for the public. Therefore, the Contractor shall proceed with the traffic signal work as soon as conditions and project staging permit. If in the opinion of the Engineer construction conditions are suitable for traffic signal work, and the Contractor has not yet begun the traffic signal work, the Engineer shall notify the Contractor to proceed. The Contractor shall begin the traffic signal work within seven (7) calendar days after notification to proceed. The Contractor shall continue to prosecute the traffic signal work until completion, or until he can no longer proceed due to conditions beyond his control. The Contractor shall notify the Engineer of any conditions impeding and/or delaying his prosecution of the work. Failure by the Contractor to proceed with the traffic signal work as specified herein shall result in liquidated damages of **\$500.00** per calendar day per occurrence.

#### **LOCATING UNDERGROUND FACILITIES.**

Revise Section 803 of the "Standard Specifications" to read:

Contractor requests for equipment locates will be granted only once prior to the start of the contract. Additional requests shall be at the expense of the Contractor. The location of underground traffic facilities does not relieve the Contractor of their responsibility to repair any item(s) damaged during the construction, at his/her own expense.

Locate requests should be directed to LCDOT's Traffic Signal Maintenance Contractor or to the LCDOT Traffic Engineering Department at (847) 377-7000.

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 call

J.U.L.I.E. at **1-800-892-0123**. For the locations of some utilities, other Agencies or Municipalities may need to be contacted.

### **ELECTRIC SERVICE INSTALLATION.**

Revise Section 805 of the "Standard Specifications" to read:

Description. This work shall consist of all materials and labor required to install, modify, or extend the electric service installation. All installations shall meet the requirements of the details in the "District 1 Standard Traffic Signal Design Details" and applicable portions of the Specifications.

#### **Materials.**

- a. General. The completed control panel shall be constructed in accordance with UL Std. 508, Industrial Control Panel, and carry the UL label. Wire terminations shall be UL listed.
- b. Enclosures. All electrical service enclosures shall be UL 50, single door design, fabricated from Type 5052 H-32 aluminum. All seams shall be continuous welded and ground smooth, and the cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. Enclosures shall meet the following additional requirements:
  1. Pole Mounted Cabinet. The cabinet shall be NEMA Type 4X. 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. A minimum size of 14-inches high, 9-inches wide and 8-inches deep is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.
  2. Ground Mounted Cabinet. The cabinet shall be NEMA Type 3R with back panel. The cabinet frame and door shall be 0.125-inch thick, the top 0.250-inch thick, and the bottom 0.500-inch thick. 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 thick hinge bolted to the cabinet with stainless steel carriage bolts and nylock nuts. The locking mechanism shall be slam-latch type with a keyhole cover. A minimum size of 40-inches high, 16-inches wide, and 15-inches deep is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.
- c. Surge Protector. Overvoltage protection, with LED indicator, shall be provided for the 120-volt load circuit by the means MOV and thermal

fusing technology. The response time shall be <5n seconds and operate within a range of -40C to +85C. The surge protector shall be UL 1449 Listed.

- d. **Circuit Breakers.** Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type, with trip-free indicating handles. 120-volt circuit breakers shall have an interrupting rating of not less than 65,000 rms symmetrical amperes. Unless otherwise indicated, the main disconnect circuit breaker for the traffic signal controller shall be rated 60 amperes, 120 V and the auxiliary circuit breakers shall be rated 10 amperes, 120 V.
- e. **Fuses, Fuseholders and Power Indicating Light.** Fuses shall be small-dimensional cylindrical fuses of the dual element time-delay type. The fuses shall be rated for 600 V AC and shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated voltage. The power indicating light shall be LED type with a green colored lens and shall be energized when electric utility power is present.
- f. **Ground and Neutral Bus Bars.** A single copper ground and neutral bus bar, mounted on the equipment panel shall be provided. Ground and neutral conductors shall be separated on the bus bar. Compression lugs, plus 2 spare lugs, shall be sized to accommodate the cables with the heads of the connector screws painted green for ground connections and white for neutral connections.
- g. **Utility Services Connection.** The Contractor shall notify the Utility Company marketing representative a minimum of 30 working days prior to the anticipated date of hook-up. This 30-day advance notification will begin only after the Utility Company marketing representative has received service charge payments from the Contractor. Prior to contacting the Utility Company for service connection, the service installation controller cabinet and cable must be installed for inspection by the Utility Company.
- h. **Ground Rod.** Ground rods shall be copper-clad steel, a minimum of 10-feet in length, and 3/4-inch in diameter. Ground rod resistance measurements to ground shall be 25 ohms or less. If necessary additional rods shall be installed to meet resistance requirements at no additional cost to the contract.

### Installation

- a. **General.** The Contractor shall confirm the orientation of the traffic service installation and its door side with the Engineer, prior to installation. All conduit entrances into the service installation shall be sealed with a pliable waterproof material.

- b. Pole Mounted. Brackets designed for pole mounting shall be used. All mounting hardware shall be stainless steel. Mounting height shall be as noted on the plans or as directed by the Engineer.
- c. Ground Mounted. The service installation shall be mounted plumb and level on the foundation and fastened to the anchor bolts with hot-dipped galvanized or stainless steel nuts and washers. The space between the bottom of the enclosure and the top of the foundation shall be caulked at the base with silicone.

Basis of Payment. The service installation shall be paid for at the contract unit price each for SERVICE INSTALLATION of the type specified which shall be payment in full for furnishing and installing the service installation complete. The type A foundation which includes the ground rod shall be paid for separately. SERVICE INSTALLATION, POLE MOUNTED shall include the 3/4-inch grounding conduit, ground rod, and pole mount assembly. Any changes 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.**

Revise Section 807 of the "Standard Specifications" to read:

General. All traffic signal systems, equipment and appurtenances shall be properly grounded in strict conformance with the NEC. See IDOT District 1 Traffic Signal detail plan sheet for additional information.

The grounding electrode system shall include a ground rod installed in all foundations, and the service installation. An additional ground rod will be required at locations where measured resistance to ground exceeds 25 ohms. Ground rods are included in the associated pay items and will not be paid for separately. Testing shall be according to Article 801.11.

- (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 801.14 of the "Standard Specifications".
  - 1. Equipment-grounding conductors shall be XLP insulated No. 6, unless otherwise noted on the plans, and bonded to the grounded conductor (neutral conductor) only at the electric service Installation. The Earth shall not be used as the equipment-grounding conductor, and no splices shall be allowed in the cable between ground rods. The equipment-grounding conductor is paid for separately.
  - 2. Equipment-grounding conductors shall be bonded, using a Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers and other metallic enclosures throughout

the traffic signal wiring system, except where noted herein. A Listed electrical joint compound shall be applied to all conductors' terminations, connector threads and contact points.

3. All metallic and non-metallic raceways containing traffic signal circuit runs shall have a continuous equipment-grounding conductor, with the following exceptions: 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.
- (c) The grounding electrode conductor shall be similar to the equipment-grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment-grounding conductor and is bonded to ground rods via exothermic welding, listed pressure connectors, listed clamps or other approved listed means.

#### **GROUNDING EXISTING HANDHOLE FRAME AND COVER**

This work shall consist of all materials and labor required to bond the equipment-grounding conductor to the existing handhole frame and handhole cover. All installations shall meet the requirements of the details in the "District One Standard Traffic Signal Design Details" and applicable portions of the Specifications.

The equipment-grounding conductor shall be bonded to the handhole frame and to the handhole cover. Two (2) ½-inch diameter x 1 ¼-inch long hex-head stainless steel bolts, spaced 1.75-inches apart center-to-center shall be fully welded to the frame and to the cover to accommodate a heavy duty Listed grounding compression terminal (Burndy type YGHA or approved equal). The grounding compression terminal shall be secured to the bolts with stainless steel split-lock washers and nylon-insert locknuts.

Welding preparation for the stainless steel bolt hex-head to the frame and to the cover shall include thoroughly cleaning the contact and weldment area of all rust, dirt and contaminates. The Contractor shall assure a solid strong weld. The welds shall be smooth and thoroughly cleaned of flux and spatter. The grounding installation shall not affect the proper seating of the cover when closed.

The grounding cable shall be paid for separately.

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 one handhole complete, regardless of the type of handhole or its location.

#### **GROUNDING CABLE.**

The cable shall meet the requirements of Section 817 of the "Standard Specifications", except for the following:

Add to Article 817.02 of the "Standard Specifications":

Unless otherwise noted on the Plans, the system grounding cable shall be one conductor, #6 gauge copper, with an XLP jacket.

The traffic signal grounding conductor (system grounding cable) shall be bonded, using a Listed grounding connector (Burdny type KC/K2C, as applicable, or approved equal), to all new and existing traffic signal mast arm poles and traffic/pedestrian signal posts, including push button posts. The grounding conductor shall be bonded to all new and existing pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system and noted herein and detailed on the plans. Bonding to existing handhole frames and covers shall be paid for separately.

Add the following to Article 817.05 of the "Standard Specifications":

**Basis of Payment.** Payment shall be at the Contract unit price, per foot, for ELECTRIC CABLE IN CONDUIT, GROUNDING, NO. 6, 1C, which price includes all associated labor and material including grounding clamps, splicing, exothermic welds/other Listed connectors and hardware.

**CONDUIT IN GROUND.**

The conduit shall meet the requirements of Section 810 of the "Standard Specifications", except for the following:

Delete Article 810.01 of the "Standard Specifications" and add the following:

**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.

Add the following to Article 810.03 of the "Standard Specifications":

Pavement, driveways, and curbs shall not be removed to install electrical conduits. All buried conduits shall be placed at a minimum depth of 30 inches, except under railroad tracks, where the minimum depth shall be five (5) feet, as measured from the final surface grade to the top of the conduit. All conduit couplings shall be threaded. Conduits terminating in junction and pull boxes shall be terminated with hubs.

When empty conduit is installed for future traffic signal interconnects(s), the Contractor shall provide a pull line within the conduit.

Revise Article 810.05 of the "Standard Specifications" to read:

**Basis of Payment:** This work will be paid for at the contract unit price per foot for CONDUIT IN GROUND of the type and size specified, which price shall be payment in full for furnishing and installing the conduit either pushed, trenched, plowed, or directionally bored with fittings, complete. Trenching, backfilling and area restoration are incidental to the cost of this item.

**HANDHOLES.**

Add the following to Section 814 of the "Standard Specifications":

All handholes shall be cast-in-place concrete, with a minimum inside dimension of 21-1/2 inches. Frames and lid openings shall match this dimension. The minimum wall thickness for heavy-duty hand holes shall be 12 inches. The handhole cover shall be labeled "Traffic Signals" with legible raised letters.

All conduits shall enter the handhole at a minimum depth of thirty (30) inches. However, the depth of conduit from detector loops located less than five (5) feet from the handhole may be less than thirty (30) inches.

All cable hooks shall be hot-dipped galvanized in accordance with AASHTO Specification M111. Hooks shall be a minimum of 3/8-inch diameter and extend into the handhole at least 6 inches. Hooks shall be placed a minimum of 12 inches below the lid, or lower if additional space is required. All cable hooks shall be secured with a retaining nut tightened against the handhole concrete.

**RAILROAD INTERCONNECT CABLE.**

The cable shall meet the requirements of Section 817 of the "Standard Specifications", except for the following:

Add the following to Article 817.02 of the "Standard Specifications":

The cable shall be three conductor standard #14 copper cable in a clear polyester binder, shielded with #36 AWG tinned copper braid with 85% coverage, and insulated with .016 inch polyethylene (black, blue, red). The jacket shall be black 0.045 PVC or polyethylene.

Revise Article 817.05 of the "Standard Specifications" to read:

Basis of Payment. This work shall be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, RAILROAD, NO. 14, 3C, which price shall be payment in full for furnishing, installing, and making all electrical connections in the traffic signal controller cabinet. Connections in the railroad controller cabinet shall be performed by railroad personnel.

**MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.**

Revise Section 850 of the "Standard Specifications" to read:

The Contractor shall not be required to pay the energy charges for the operation of the existing traffic signal installation. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the Contract or any portion thereof.

The Contractor shall have electricians on staff with IMSA Level II certification to provide signal maintenance.

This item shall include maintenance of all traffic signal equipment at the intersection, including cameras, emergency vehicle pre-emption equipment, master controllers, telephone service installations, communication equipment, communication cables and conduits to adjacent intersections.

The maintenance shall be according to Article 850 of the "Standard Specifications", and the following contained herein.

The Contractor shall check all controllers every two (2) weeks, which will include visually inspecting all timing intervals, relays, detectors, and pre-emption equipment to ensure that they are functioning properly. This item includes, as routine maintenance, all portions of the emergency vehicle pre-emption system. The Contractor shall maintain in stock at all times a sufficient amount of materials and equipment to provide effective temporary and permanent repairs.

The Contractor shall provide immediate corrective action when any part or parts of the system fail to function properly. Two (2) far side heads facing each approach shall be considered the minimum acceptable signal operation pending permanent repairs. When repairs at a signalized intersection require that the controller be disconnected, and power is available, the Contractor shall place the traffic signal installation on flashing operation. The signals shall flash RED for all directions unless a different indication has been specified by the Engineer. The Contractor shall be required to place at least 2 STOP signs (R1-1-36) at each approach of the intersection as a temporary means of regulating traffic. At approaches where a yellow flashing indication is necessary, as directed by the Engineer, STOP signs will not be required. The Contractor shall furnish and equip all their signal maintenance vehicles 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 those which may be damaged or stolen.

The Contractor shall provide the Engineer with a 24-hour telephone number for traffic signal maintenance. The Contractor, or his representative, shall be available on a 24-hour basis to respond to emergency calls by the Traffic Engineer or other parties.

Traffic signal equipment which is lost or not returned to the County for any reason shall be replaced with new equipment meeting the requirements of these Specifications.

The Contractor shall respond to all emergency calls from the County or others within one hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the County. 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 County's Traffic Signal Maintenance Contractor perform the maintenance work required. The County's Traffic Signal 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 County's Traffic Signal Maintenance Contractor to make reviews of the existing traffic signal installation that has been transferred to the Contractor for maintenance.

The Engineer may require the Contractor to transfer maintenance of a signal back to the County's Traffic Signal Maintenance Contractor (or other electrical contractor) for a short time. This may become necessary due to other signal projects in the area, or if the County needs to perform work at the signal. Any costs incurred by the Contractor for maintenance transfer inspections of this type shall be incidental to the pay item MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.

Basis of Payment. This work shall be paid for at the contract unit price each for MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION.

#### **TRAFFIC-ACTUATED CONTROLLER.**

Add the following to Section 857 of the "Standard Specifications":

The controller shall be the latest model available that is compatible with "icons" software (NTCIP) or "Aries" software, currently in use by LCDOT, and shall be NEMA TS2 Type 1 compatible, unless specified otherwise on the plans. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. The controller shall be equipped with an Ethernet port and a removable data key to save the controller database. Only controllers supplied by approved District 1 closed-loop equipment manufacturers will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer. The traffic signal controller shall provide features to inhibit simultaneous display of circular yellow and yellow arrow indications.

#### **INTERSECTION MONITOR MODULE**

This item shall consist of furnishing and installing an Intersection Monitor (IM) Module or Intersection Monitor (IM) Data Key manufactured by the Econolite Corporation as a replacement or addition to an existing traffic signal controller. This item is necessary at isolated (non-interconnected) traffic signals in order to monitor the intersection and controller operations. The IM module is required in ASC/2 controllers and the IM Data Key is required in ASC/3 controllers.

Basis of Payment: This item will be paid for at the contract unit price each for INTERSECTION MONITOR MODULE, which price shall be payment in full for furnishing and installing the module (or Data Key) complete with all necessary connections and equipment for proper operations.

**MASTER CONTROLLER.**

Revise Articles 860.02 and 860.03 of the "Standard Specifications" to read:

The Master Controller shall be the latest model available that is compatible with "Aries" software, currently in use by LCDOT. The minimum baud rate for fiber optic interconnected signal systems shall be 9600 bps.

Functional requirements in addition to those in Section 863 of the Standard Specification include:

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. The interface shall be equipped with a standard Three-Electrode Heavy Duty Gas Tube Surge Arrestor. The cabinet shall be equipped with a US robotics modem, minimum 56K baud rate or approved equal.

**FIBER OPTIC CABLE.**

Revise Section 871 of the "Standard Specifications" to read:

This work shall consist of furnishing and installing Fiber Optical cable in conduit with all accessories and connectors according to Section 871 of the "Standard Specifications". The cable shall be of the type, size, and the number of fibers specified, with six fibers per tube.

The distribution enclosure shall be a Corning Model WIC-04P Wall-Mountable Interconnect Center, or approved equivalent, capable of accommodating the required number of fibers.

All fibers being terminated shall be connected to the distribution enclosure and labeled at the connector and also at the enclosure bulkhead. The label shall include the direction and also the fiber number (e.g. S1, S2, N11, N12). Both ends of each section of fiber optic cable being installed shall be spliced and/or terminated with approved mechanical connectors according to the following: This includes installing approved mechanical connectors on existing fibers that are being joined to the new fiber optic cable.

Multimode: The contractor shall coordinate with the equipment vendor, and shall terminate as many multimode fibers as are necessary to establish proper communications with signal controllers and/or video transmission equipment. In addition, the contractor shall terminate four unused multimode fibers and attach them to the distribution enclosure. All multimode terminations shall be ST compatible connectors with ceramic ferrules.

Singlemode: The contractor shall splice and/or terminate the number of singlemode fibers shown on the project plans, if any. Singlemode fiber terminations shall utilize

pre-fabricated, factory-terminated pigtailed fusion spliced to bare fibers. All fusion splices shall be secured on Corning splice trays, Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. All single-mode connectors shall be SC compatible, with ceramic ferrules.

A minimum of 13 feet of slack cable shall be provided for the controller cabinet. The controller cabinet slack cable shall be stored as directed by the Engineer.

Fiber Optic cable may be gel filled or have an approved water blocking tape.

Basis of Payment. The work shall be paid for at the contract unit price per foot for FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, 24 FIBER (12 MULTIMODE AND 12 SINGLEMODE) or FIBER OPTIC CABLE IN CONDUIT, NO. 62.5/125, 36 FIBER (12 MULTIMODE AND 24 SINGLEMODE) or FIBER OPTIC CABLE IN CONDUIT, 24 SINGLEMODE) for the cable in place, including distribution enclosure(s), all connectors, pigtailed, splice trays, connector bulkheads, and the required number of terminations described above. Additional fiber terminations and/or splices required by the Engineer, (not included in this item), shall be paid for as TERMINATE FIBER IN CABINET and/or SPLICE FIBER IN CABINET.

#### TERMINATE FIBER IN CABINET.

This work shall consist of terminating existing or new fibers in field cabinets or buildings as indicated on the plans or as directed by the Engineer.

All multi-mode connectors shall be ST compatible, with ceramic ferrules. Singlemode fiber terminations shall utilize pre-fabricated, factory-terminated (SC compatible) pigtailed fusion spliced to bare fibers. All fusion splices shall be secured on Corning splice trays, Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. Splice trays and connector bulkheads shall be incidental to TERMINATE FIBER IN CABINET, and shall not be paid for separately. Connector bulkheads shall be the proper type for the fiber enclosure at the location, and shall be properly secured to the enclosure.

The quality of all fiber splices shall be verified by testing and documentation in accordance with Article 802.08(b) of the "Standard Specifications", to the satisfaction of the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price each for each fiber terminated in a field cabinet or inside a building as TERMINATE FIBER IN CABINET, which will be payment in full for terminating each required multimode or singlemode fiber, including all connectors, pigtailed, splice trays, bulkheads, testing and documentation. The splicing of pigtailed for singlemode fibers is included in the cost of TERMINATE FIBER IN CABINET, and shall not be paid for separately. This pay item

shall not be used to pay for fiber terminations and/or splices completed to meet the requirements of FIBER OPTIC CABLE IN CONDUIT.

#### SPLICE FIBER IN CABINET.

This work shall consist of fusion splicing singlemode fibers in a field cabinet or inside a building as indicated on the plans and as directed by the Engineer. Splices shall be secured in fiber optic splice trays within fiber optic distribution enclosures. The splice trays shall be Corning Models M67-068, M67-110, or approved equivalent, capable of accommodating the required number of fusion splices. Splice trays shall be incidental to SPLICE FIBER IN CABINET and shall not be paid for separately. The quality of all fiber splices shall be verified by testing and documentation in accordance with Article 802.08(b) of the "Standard Specifications", to the satisfaction of the Engineer.

All optical fibers shall be spliced to provide continuous runs. Splices shall be allowed only in equipment cabinets except where otherwise shown on the Plans.

All splices shall be made using a fusion splicer that automatically positions the fibers using a system of light injection and detection. The Contractor shall provide all equipment and consumable supplies.

Basis of Payment: This work shall be paid for at the contract unit price each for SPLICE FIBER IN CABINET, which will be payment in full for all fusion splicing, fiber optic splice trays, testing and documentation, at a cabinet or building location shown on the plans and as directed by the Engineer. This pay item shall not be used to pay for fiber terminations and/or splices completed to meet the requirements of FIBER OPTIC CABLE IN CONDUIT.

#### FIBER OPTIC TRACER CABLE.

The cable shall meet the requirements of Section 817 of the "Standard Specifications", except for the following:

In order to trace the fiber optic cable after installation, an XLP black insulated copper cable No. 14 shall be pulled in the same conduit as the fiber optic cable. 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. In order to minimize the number of splices required, the tracer cable shall incorporate maximum lengths of cable supplied by the manufacturer. Splicing of the tracer cable will be allowed at the handholes only. The tracer cable splice shall use a Western Union splice soldered with resin core flux. All exposed surfaces of the solder shall be smooth. Splices shall be soldered using a soldering iron. Blowtorches or other devices which oxidize copper cable shall not be allowed for soldering operations. The splice

shall be covered with underwater grade WCSMW 30/100 heat shrink tube, minimum length four (4) inches and with a minimum one (1) inch coverage over the XLP insulation.

Basis of Payment: The tracer cable shall be paid for separately as ELECTRIC CABLE IN CONDUIT, TRACER, NO. 14 1C per foot, which price shall include all associated labor and material for installation.

**CONCRETE FOUNDATIONS**

Add the following to Article 878.03 of the "Standard Specifications":

All anchor bolts shall be according to Article 1006.09, except all anchor bolts shall be hot dipped galvanized the full length of the anchor bolt including the hook.

Concrete Foundations, Type A for Traffic Signal Posts shall provide anchor bolts with the bolt pattern specified within the "District 1 Standards Traffic Signal Design Details". All Type A foundations shall be a minimum depth of forty-eight (48) inches.

Concrete Foundations, Type C (Special) for Traffic Signal Cabinets with Uninterruptible Power Supply (UPS / Battery Back-Up) cabinet installations shall be constructed a minimum of forty-eight (48) inches long by thirty-one (31) inches wide, and shall have a minimum depth of forty-eight (48) inches. An integral concrete pad foundation for the UPS cabinet shall be constructed a minimum of thirty-one (31) inches long by twenty (20) inches wide by ten (10) inches deep. The UPS cabinet pad foundation shall be integral to the side of the signal cabinet foundation, and shall be constructed on the same side as the signal cabinet power panel. An L-Shaped concrete apron shall be constructed along the entire front of the signal cabinet foundation, the entire side of the UPS cabinet foundation, and the entire front of the UPS cabinet foundation. This concrete apron shall be a minimum of thirty-six (36) inches wide by four (4) inches deep. Anchor bolts shall be provided and spaced according to the cabinet manufacturer's specifications.

Concrete Foundations, Type D for Traffic Signal Cabinets shall be constructed a minimum of forty-eight (48) inches long by thirty-one (31) inches wide, and shall have a minimum depth of forty-eight (48) inches. The concrete apron at the signal cabinet shall be constructed a minimum of thirty-six (36) inches wide by forty-eight (48) inches long by four (4) inches deep. Anchor bolts shall be provided and spaced according to the cabinet manufacturer's specifications.

Concrete Foundations, Type E for Mast Arm and Combination Mast Arm Poles shall meet the following requirements:

MAST ARM SIZE	DIAMETER OF FOUNDATION	DESIGN DEPTH OF FOUNDATION
14'-38'	30"	15'
> or = 40'	36"	15'

COMBINATION MAST ARMS	36"	15'
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The Resident Engineer shall approve the foundation excavation prior to placing any concrete.

**DETECTOR LOOP**

Revise Section 886 of the "Standard Specifications" to read:

A minimum of seven (7) working days prior to the Contractor cutting loops, the Engineer shall mark the location of the proposed loops and contact the Traffic Engineer **(847) 377-7000** to inspect and approve the layout. When preformed detector loops are installed, the Contractor shall have them inspected and approved prior to the placement of the concrete surface, using the same notification process as above.

Loop detectors shall be installed according to the requirements of the "District 1 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 in order to minimize the length of the saw cut (homerun), unless otherwise directed by the Engineer or as shown on the plans. Polyethylene unit duct shall be used for detector loop raceways to the handholes. Unit duct shall meet the requirements of NEC Article 343. All unit duct used for traffic signal loop detector runs shall be incidental to the price of the detector loop.

The detector loop cable insulation shall be labeled with the cable specifications. Each detector loop lead-in wire shall be labeled in the handhole using a Panduit 250W175C waterproof tag or approved equal. The tag will be secured to each wire with nylon ties.

The resistance to ground for new detector loops shall be a minimum of 500 megaohms under any conditions of weather or moisture. Inductance shall be more than 50 microhenries and less than 700 microhenries. Quality readings shall be more than 5. All new or replacement lead-in cables shall be connected to the loop interface panel using appropriate crimp-on, spade type connectors.

Detector loop measurements shall include the saw cut and the length of the loop lead-in to the edge of pavement. The lead-in wire, including all necessary connections for proper operations, from the edge of pavement to the handhole, shall be incidental to the price of the detector loop. Unit duct, trench and backfill, and drilling of pavement or handholes shall be incidental to detector loop quantities.

The location of each dive hole shall be marked on the face of the curb, the edge of pavement or the handhole, with a saw cut 1/4 inch deep by 4 inches long.

- (a) Type I: Each detector loop, which is to be installed in new asphalt pavement, must be placed in the pavement below the surface course. Each detector loop, which is to be installed in an existing asphalt or concrete pavement, shall be located to miss existing pavement cracks, if possible. Loop sealant used to seal new loops shall consist of a two-component thixotropic, chemically-cured polyurethane. The sealant will be Chemque Q-Seal 295, Perol Elastic Cement

A/C Grade or an approved equal. The sealant shall be installed 1/8 inch below the pavement surface. Excess sealant, which accumulates on the surface, shall be removed immediately. Loop sealant used to reseal existing loops shall be composed of an asphalt-based compound. The sealant will be Doseal 230 or an approved equal.

- (b) Preformed. This work shall consist of furnishing and installing a rubberized heat resistant preformed traffic signal loop in accordance with the "Standard Specifications", except for the following:

Preformed detector loops shall be installed in new pavement constructed of portland cement concrete and shall be placed in the substrate. Loop lead-ins shall be protected to the satisfaction of the Engineer.

Handholes shall be placed next to the shoulder or back of curb when preformed detector loops enter the handhole.

Preformed detector loops shall be factory assembled. Homeruns and interconnects shall be pre-wired and shall be an integral part of the loop assembly. The loop configurations and homerun lengths shall be assembled for the specific application. The loop and homerun shall be constructed using 11/16-inch outside diameter (minimum), 3/8-inch inside diameter (minimum) Class A oil resistant synthetic cord-reinforced hydraulic hose with 250 psi internal pressure rating. Hose for the loop and homerun assembly shall be one continuous piece. No joints or splices shall be allowed in the hose except where necessary to connect homeruns or interconnects to the loops. This will provide maximum wire protection and loop system strength. Hose tee connections shall be heavy-duty high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking. The wire used shall be #16 THWN stranded copper. The number of turns in the loop shall be application specific. Homerun wire pairs shall be twisted a minimum of four turns per foot. No wire splices will be allowed in the preformed loop assembly. The loop and homeruns shall be filled and sealed with a flexible sealant to insure complete moisture blockage and further protect the wire.

To minimize the length of time that a signal operates without vehicle detection, detector loops for active traffic signal installations shall be installed in a timely manner as follows:

If in the opinion of the Engineer construction conditions are suitable for loop installation(s), the Engineer shall notify the Contractor to proceed. The detector loops shall be installed and fully operational within fourteen (14) calendar days following notification to proceed by the Engineer. This 14-day period shall be in effect throughout the entire year, including the off season, regardless of the Contractor's working day status. Failure by the Contractor to complete the loop installation(s) within

the specified timeframe shall result in liquidated damages in the amount of \$500.00 per calendar day, per occurrence.

Basis of Payment. This work shall be paid for at the contract unit price per foot for DETECTOR LOOP, TYPE I or PREFORMED DETECTOR LOOP as specified in the plans, which price shall be payment in full for furnishing and installing the detector loop and all related connections for proper operation.

### **EMERGENCY VEHICLE PRIORITY SYSTEM**

Revise Section 887 of the "Standard Specifications" to read:

If not marked in the Contract plans, 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 of the latest type manufactured and must be completely compatible with all components of signal equipment currently in use by the County.

All new installations shall be equipped with confirmation beacons as shown on the District 1 "Standard Traffic Signal Design Details". The confirmation beacon shall consist of a PAR 38 white LED flood lamp (90 watt equivalent, approved by the Engineer) for each direction of traffic. 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 to prevent chafing of wires. In order to maintain uniformity between communities, the confirmation beacons shall indicate when the control equipment receives the preemption signal. The preemption movement shall be signaled by a flashing indication at the rate specified by Section 4K.01 of "MUTCD". The stopped preempted movements shall be signaled by a continuous indication.

All light operated systems shall operate at a uniform rate of 14.035 hz  $\pm$  0.002 hz, or as otherwise required by the Traffic Engineer, and provide compatible operation with other light systems currently being operated in the County.

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 incidental to the cost of the Light Detector. The light 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.

### **TEMPORARY TRAFFIC SIGNAL INSTALLATION**

Add the following to Section 890 of the "Standard Specifications":

Only an approved equipment vendor will be allowed to assemble the temporary traffic signal cabinet. Also, an approved equipment vendor shall assemble and test a temporary railroad traffic signal cabinet. (Refer to the "Inspection of Electrical

Systems" specification) A representative of the approved control equipment vendor shall be present at the temporary traffic signal turn-on inspection.

Only controllers compatible with "icons" software (NTCIP) or "Aries" software, currently in use by LCDOT, will be approved for use at temporary signal locations. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. All controllers used for temporary traffic signals shall be fully-actuated NEMA microprocessor based with RS232 data entry ports compatible with existing monitoring software, installed in NEMA TS-1 or TS-2 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 bridge 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 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 diameter holes to run the electric cables through. The 4-inch diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.

The stand which supports the temporary traffic signal cabinet shall be constructed of lumber and plywood that has been pressure-treated to protect against rot, mold, and insects.

Grounding shall be provided for the temporary traffic signal cabinet meeting or exceeding the applicable portions of the National Electrical Code, Section 807 of the "Standard Specifications" and the District 1 Traffic Signal Specifications for "Grounding of Traffic Signal Systems".

**All traffic signal head sections shall be twelve (12) inches. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Traffic Engineer. The Contractor shall furnish enough cable slack 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.**

For temporary traffic signal installations within closed loop system(s), the controller shall be compatible with the existing traffic signal system master controller. The existing system interconnect is to be maintained as part of the Temporary Traffic Signal Installation specified on the plan. The interconnect shall be installed into the temporary controller cabinet as per the notes or details on the plans. Refer to the INTERRUPTION OF COMMUNICATION requirements described earlier. All labor and

equipment required to install and maintain the existing interconnect shall be incidental to the item TEMPORARY TRAFFIC SIGNAL INSTALLATION.

All emergency vehicle priority 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 priority equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of signal equipment currently in use by the County. All light operated systems shall operate at a uniform rate of 14.035 hz  $\pm$ 0.002, or as otherwise required by the Engineer. All labor and material required to install and maintain the Emergency Vehicle Priority system shall be incidental to the item Temporary Traffic Signal Installation.

All temporary traffic signal installations shall have approved vehicular detection and approved pedestrian push buttons installed as shown on the plans or as directed by the Engineer. Vehicular detection shall be provided by video sensors, microwave sensors, or detector loops, and shall be paid for separately. The Contractor shall install, wire, and adjust the alignment of the vehicular detection system in accordance with the manufacturer's recommendations and requirements. When directed by the Engineer, this item shall also include operational items such as: controller database changes, timing changes, activation/deactivation of phases, relocation of signal heads, relocation / reconfiguration of detectors (microwave and/or video), and bagging / unbagging signal heads. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up the vehicular detection system. On temporary traffic signal installations with detector loops, polyethylene unit duct shall be used for detector loop raceways from the saw-cut to 10 feet up the wood pole, unless otherwise shown on the plans. Unit duct shall meet the requirements of NEC Article 343. All unit duct used for traffic signal loop detector runs shall be incidental to the price of the detector loop.

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 assemblies and posts are specified for the permanent signals, the signs shall be relocated to the new equipment at no extra cost.

The Contractor shall not be required to pay the energy charges for the operation of the existing traffic signal installation. If the installation replaces an existing signal, the Contractor shall not be required to pay the energy charges for the operation of the temporary traffic signal. The Contractor shall pay the energy charges for all other temporary traffic signal installations.

The Contractor shall furnish all control equipment for the temporary traffic signals(s) unless otherwise stated in the plans. On projects with multiple temporary traffic signal installations, all controllers shall be of the same manufacturer and model number with current software installed.

Maintenance shall meet the requirements of the "Standard Specifications" and District 1 Specifications for "Maintenance of Existing Traffic Signal Installation". Maintenance of temporary signals and of the existing signals shall be incidental to the cost of this item. When temporary traffic signals are to be installed at locations where existing signals are presently operating, the Contractor shall be fully responsible for the maintenance of the existing signal installation as soon as he begins any physical work on any portion of the project. Maintenance responsibility of the existing signals shall be incidental to the item TEMPORARY TRAFFIC SIGNAL INSTALLATION. 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 contact the Traffic Engineer **(847) 377-7000** to request an inspection of the installation(s).

Temporary Traffic Signals for bridge projects shall follow the State Standards, "Standard Specifications", District 1 Traffic Signal Specifications, and any plans for Bridge Temporary Traffic Signals included in the plans. The installation shall meet the above requirements for TEMPORARY TRAFFIC SIGNAL INSTALLATION. In addition, all electric cable shall be aerially suspended, at a minimum height of 18 feet, on temporary wood poles (Class 5 or better) of 45 feet minimum height. The signal heads shall be span-wire-mounted or bracket-mounted to the wood pole or as directed by the Engineer. The Controller cabinet shall be mounted to the wood pole or as directed by the Engineer. All approaches for temporary traffic signals for bridge projects shall have microwave vehicle sensors or video vehicle detection, as shown on the plans or as approved by the Engineer.

Basis of Payment: This work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL INSTALLATION which shall include all costs for the installation, modification, maintenance, operational items, complete removal of the temporary traffic signal., and all material required to complete the work.

**REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT.**

Add the following to Article 895.05 of the "Standard Specifications":

The traffic signal equipment, which is to be removed and will become the property of the Contractor, shall be disposed of by the Contractor outside the right-of-way at his/her own expense.

The Contractor shall safely store and arrange for delivery of all equipment that will remain the property of LCDOT. The Contractor shall deliver, unload and stack the equipment at the owner's facility, as directed by the Engineer, within 30 days of removing it from the traffic signal installation. The Contractor shall provide three (3) copies of a list of equipment that is to remain the property of LCDOT including model and serial numbers where applicable. The Contractor shall also provide a copy of the contract plan or special provisions showing the quantities and type of equipment to be delivered. 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. The Contractor shall be responsible for the condition of the traffic

signal equipment from the time of removal until the acceptance of a receipt written by the owner indicating that the items have been returned in good condition.

Traffic signal equipment which is lost or not returned to the County for any reason shall be replaced with new equipment meeting the requirements of these Specifications.

### **PEDESTRIAN PUSH-BUTTON**

Replace Article 1074.02 of the "Standard Specifications" with the following:

Pedestrian Push-button assembly shall be ADA compliant, 3-inch round style, highly vandal resistant, non-moving, pressure activated, with a solid-state Piezo switch actuator that cannot be stuck in an "on" or constant call position. A momentary (non-latching) red LED and audible tone shall be provided to confirm an actuation. The housing, or bezel, of the assembly shall be solid aluminum and powder coated yellow. The button shall be stainless steel or nickel-plated aluminum.

Pedestrian Push-button assembly shall be a Campbell Company 4 EVR 120, a Polara BullDog BDLM2-Y, or approved equivalent.

The pedestrian station shall be a Campbell Company 57H Station, or approved equivalent. The pedestrian station shall be powder coated black to match ornamental (Special) mast arm poles and signal posts. The pedestrian station shall be unpainted to match unpainted galvanized mast arm poles and signal posts.

The station shall be installed with a 5-inch by 7<sup>3</sup>/<sub>4</sub>-inch Campbell Company vandal resistant sign, according to the following: Where pedestrian signal heads are used, pedestrian signs shall provide the "Push Button for" legend, with the Walking Man symbol and arrow (R10-4b). Where no pedestrian signal heads are used, pedestrian signs shall provide the "Push Button for Green Light" legend with arrow (R10-3 with arrow), or as specified on the plans.

Refer to STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL), STEEL COMBINATION MAST ARM ASSEMBLY AND POLE (SPECIAL), and/or TRAFFIC SIGNAL POST (SPECIAL) for additional installation requirements.

Basis of Payment: This work shall be paid for at the contract unit price each for PEDESTRIAN PUSH BUTTON. The unit price shall include furnishing and installing the pedestrian station, push button, sign, and all necessary equipment and connections for proper operations. Electric cable in conduit shall be paid for separately.

Signal modification projects may require both new pedestrian buttons (described above) and existing pedestrian buttons remaining in operation. The County desires to have all buttons at a particular traffic signal be similar in appearance and operation. The contractor should advise the Traffic Engineer if a different button should be installed in order to match the existing ones.

### **CONTROLLER CABINET AND PERIPHERAL EQUIPMENT.**

Add the following to Article 1074.03 of the "Standard Specifications":

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. Individual load switches shall be provided for each vehicle, pedestrian, and right turn overlap phase.

- Cabinets – Controller cabinets shall have a footprint of approximately 44 inches wide by 26 inches deep. Type IV cabinets shall be 65 inches high, and shall provide a third shelf for mounting additional equipment. Type V cabinets shall be 77 inches high. Cabinets shall be fabricated of 1/8" thick unpainted aluminum alloy 5052-H32. The surface shall be smooth, free of marks and scratches. All external hardware shall be stainless steel.
- Cabinet Doors – Provide front and rear doors of NEMA type 3R construction with cellular neoprene gasket that is rain tight. Door hinges shall be continuous 14-gauge stainless steel and shall be secured with 1/4-20 stainless steel carriage bolts.
- Controller Harness – Provide a TS2 Type 2 "A" harness in addition to the TS2 Type 1 harness.
- Surge Protection – Atlantic Scientific ZoneIT Model 91391 base station, Model 91375 ZoneIT pluggable module (50kA rating) with LED status indicators, or approved equivalent.
- BIU – Containment screw required.
- Switch Guards – All switches shall be guarded.
- Back Panel – The back panel wiring shall be securely covered with a piece of plexiglass, minimum thickness 1/8-inch.
- Heating – One (1) 200-watt, thermostatically-controlled, Hoffman electric heater, or approved equivalent.
- Lighting – Four (4) GE Tetra PowerGrid LED light assemblies, or approved equivalent.
- Plan & Wiring Diagrams – 12" x 16" moisture sealed container attached to door.
- The cabinet shall be equipped with a pull-out drawer/ shelf assembly.
- Detector Racks –
  - Configuration #1, Half-size rack, to be used when few, if any, detector loops are required. Fully wired to support one BIU, eight channels of vehicle detection, and four channels of Emergency Vehicle Preemption (EVP).
  - Configuration #2, Full-size rack, to be used when the required detector loops cannot be accommodated by the half-size rack. Fully wired to support one BIU, sixteen channels of vehicle detection, and four channels of EVP.
- Field Wiring Labels – All field wiring shall be labeled.
- Field Wiring Termination – Approved channel lugs required.
- Power Supply – Provide a nonconductive shield.
- Circuit Breaker – The signal circuit breaker shall be sized for the proposed load, but shall not be rated less than thirty (30) amps.
- Police Door – Provide wiring and termination for plug-in manual phase advance switch.

- Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or approved equivalent.
- MMU – 16 Channel, LCD display, IP addressable (ethernet) Malfunction Management Unit. The MMU shall be connected to the ethernet switch with a CAT 5 cable, and configured for proper communication.

**FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL**

This item shall comply with Sections 857 and 863 of the "Standard Specifications" for Road and Bridge Construction, and shall also comply with the following requirements:

The controller shall meet the requirements for NEMA-TS2 standards for a Type 1 Cabinet.

The controller shall be the latest model available that is compatible with "icons" software (NTCIP) or "Aries" software, currently in use by LCDOT. Controller software compatibility requirements are based upon the controller's location in the communication system, and shall be as shown on the plans. The controller shall be equipped with an Ethernet port and a removable data key to save the controller database.

The cabinet shall be 65 inches high, and shall provide a third shelf for mounting additional equipment. Also, the cabinet shall have front and rear doors of NEMA type 3R construction with cellular neoprene gasket that is rain tight. Door hinges shall be continuous 14-gauge stainless steel and shall be secured with ¼-20 stainless steel carriage bolts. Standard equipment shall include a three-point locking system that secures the door at the top, bottom and center. A corbin lock with two keys shall also be furnished. The front and rear doors shall be equipped with a two-position doorstop, one at 90° and one at 120°.

Basis of Payment: This item will be paid for at the contract unit price each for FULL-ACTUATED CONTROLLER AND TYPE IV CABINET, SPECIAL which price shall be payment in full for furnishing and installing the cabinet and controller, complete with necessary connections and equipment for proper operation, at a location designated by the Engineer. If required, the transceiver shall be considered incidental to the cost of this item. Removal of an existing controller, and its return to the County, shall also be incidental to the cost of this item.

**TRAFFIC ACTUATED CONTROLLER AND CABINET INTERCONNECTED WITH RAILROADS.**

Add the following to Article 1074.03 of the "Standard Specifications" to read:

Cabinets shall be NEMA TS2 Type 1 design, meeting the requirements of CONTROLLER CABINET AND PERIPHERAL EQUIPMENT and FULL ACTUATED CONTROLLER, IN TYPE IV CABINET, NEMA-TS2, (SPECIAL). In addition, the following shall apply to railroad interconnected equipment:.

Only an approved traffic signal equipment supplier shall assemble railroad interconnected controllers and cabinets. The equipment shall be tested and approved in the equipment supplier's District 1 approved facility prior to field inspection.

The pedestrian clearance during railroad preemption will be limited to a flashing "Don't Walk" interval, equal in length to the vehicle yellow clearance interval, and shall time concurrently with the vehicle yellow clearance.

The terminal facility shall be wired so as to provide supervision of all essential pre-emption components. This wiring shall cause the facility to transfer to or remain in flashing operation in the event any critical component is missing, not connected or failed. Interface relays shall be wired so as to be in the energized state during normal (non-pre-empt) operation. Failure of a relay coil shall open the supervision loop and cause the intersection to transfer to flashing operation. Each critical element such as controller harnesses and interface relays shall be wired to form a series loop which must be complete for normal operation.

A method of supervising the 6-conductor cable interconnecting the traffic and railroad facilities shall provide flashing operation during failed cable conditions. Upon detection of a failed railroad interconnect the controller shall provide one (1) track clearance green interval and shall enter flashing operation at end of track clearance yellow interval. Such flashing operation must be manually reset. The supervision circuit shall, within reason, be capable of detecting failure of the supervision circuit components themselves, and shall provide fail-safe operation immediately upon detecting any failure.

The interconnect to the railroad facility shall be such that demand for pre-emption begins when the railroad flashers begin to flash and ends when railroad gates begin to rise.

An IDOT approved method of controller security shall be implemented to assure data integrity and to preclude changes to critical data. The method shall include a means for the controller to continuously verify the controller/cabinet CRC (cycle redundancy check) match. The CRC will be developed based on preemptor entries, unit data (including phases in use, sequence and ring structure, etc.), overlap assignment and timing, firmware version, and any special memory content necessary for proper operation. Where data is stored in a data module, a spare data module shall be provided to the Engineer.

The controller will provide for immediate track clearance green re-service upon receipt of each subsequent preempt demand. During the re-service all normal vehicle clearance intervals, including red revert, will be respected.

The cabinets shall be equipped with a labeled test switch for the railroad interconnected preemption line which will place a call in the controller's railroad preemption phase and also will acknowledge power to the interconnect line. The switch shall automatically return to normal position upon release.

### **UNINTERRUPTIBLE POWER SUPPLY (UPS)**

This specification sets forth the minimum requirements for an uninterruptible power system with battery back-up, for a traffic signal. The system is comprised of the UPS or Inverter unit, bypass switch, batteries, cabinet, and related wiring harnesses.

#### **UPS (Inverter Unit)**

The inverter unit shall be a TechPower Developments DBL1000MX digital double-conversion traffic UPS, or approved equivalent.

In case of UPS failure and or battery depletion, the UPS will ensure upon the return of utility power that the utility power will be failsafe-bypassed to the traffic signal controller. An external manual bypass shall provide a secondary redundant path for the utility power if the internal UPS bypass fails. The UPS shall be capable of operating in a bypass mode until the depleted batteries have recharged to a predetermined state, and then resume full on-line operation. The UPS shall be capable of hot swapping the batteries or battery bank, without shutting down the UPS.

The inverter unit shall be IP addressable, and shall interface with the traffic signal controller or master controller to provide the "On Battery" alarm to the Lake County Division of Transportation facilities over the normal fiber optic/dial-up communication channels. The "On Battery" alarm must be wired to the Alarm 2 Function of the traffic signal controller back panel. The connector shall be rated for 150 amps DC.

#### **Bypass Switch**

The Bypass Switch shall consist of one main manual switch, which provides a means of placing the UPS into a bypassed position without interruption of the power to the intersection. A second switch provides a means of isolating the AC utility power from the UPS. This provides a means of testing the UPS/Battery back-up by turning off the AC utility power to the UPS with the UPS in normal operation. Both of these switches shall be rated 20 amps at 600 volts.

The bypass switch shall automatically revert back to AC utility power when power is restored, even if an external generator is still connected and providing power to the traffic signal.

The Bypass Switch AC connections consist of two circular locking Input/Output connectors, phased to the UPS AC harness. This switch will include an alternate-source input connection, which provides a means of connecting a generator or alternate utility source. The Bypass Switch case shall be constructed of aluminum.

#### **Batteries**

This system shall be comprised of three(3) or six (6) 12-volt batteries, as required, to provide a minimum two (2) hours of normal signal operation followed by a minimum four (4) hours of flashing red operation. Non-essential items such as streetlights, illuminated street name signs, cabinet lamps and fans, and video monitors do not need to be connected to the UPS. Batteries shall be MK deep cycle batteries, AGM-type, with a 79 Ah capacity, or an approved equal. The battery cable shall consist of a quick

release connector rated at 150 amps. The connector shall have recessed pins and be polarized to prevent accidental cross connecting of the battery string to the UPS.

### **Cabinet**

The cabinet shall be a California Chassis aluminum cabinet, Part Number FCU104013, with a natural aluminum mill finish, or approved equal.

The external cabinet dimensions shall be 41 inches tall by 25 inches wide by 16 inches deep, excluding the door. The cabinet shall house all batteries, the UPS, the Bypass Switch, and the wiring harnesses.

When being installed at an existing traffic signal cabinet, the cabinet for the UPS shall rest on the traffic signal cabinet foundation and shall also be secured to the right side of the traffic signal cabinet. For new traffic signal cabinets, the foundation and UPS cabinet installation shall be according to IDOT Standard 878001-04. The UPS cabinet shall not overhang / encroach on sidewalks, bikepaths, or paved shoulders.

The cabinet shall provide an external connection for an AC generator to power the signals, if necessary, during an extended utility power outage. The external connection shall be a NEMA Style 5-15 male flanged receptacle, and shall be securely covered by a screw-on aluminum plate with a rubber gasket.

The UPS shall be equipped with an integrated safety ("Tip") switch that will interrupt inverter output power in the event of a cabinet knockdown. The safety switch may be either internal to the inverter unit, or mounted inside the UPS cabinet. The safety switch shall be designed to interrupt output power in the event that the inverter is tilted more than twenty degrees on any axis. The switch shall be mechanically latching to ensure that power is not automatically restored to the UPS until the system is reset.

A blue LED indicator light shall be mounted on the side of the UPS cabinet facing traffic and shall illuminate to indicate when the utility power has been disrupted and the UPS is in operation. The light shall be a minimum 1" diameter, and bright enough to be visible from the driving lanes in the daylight.

Basis of Payment: This item shall be paid for at the contract unit price, each, for furnishing and installing the UNINTERRUPTIBLE POWER SUPPLY (UPS). The price shall include the UPS/Inverter unit, Bypass Switch, Batteries, Cabinet, wiring harnesses, and all associated equipment and materials necessary for proper operation.

### **CABINET NEATNESS**

The Contractor shall assure that all wiring and peripheral equipment in any new traffic signal cabinet is in a neat and orderly fashion that is acceptable to the Engineer. This applies to controller cabinets, master cabinets, railroad cabinets, communication cabinets, electrical service cabinets, or any other new cabinet called for in the project plans.

All conduit entrances into the cabinet shall be sealed with a pliable waterproof material. Electrical cables inside the cabinet shall be neatly trained along the base and back of

the cabinet. Each conductor shall be connected individually to the proper terminal, and the spare conductors shall be bound into a neat bundle. All cables, including those for signals, vehicle detection, pushbuttons, emergency vehicle preemption, video transmission, and communication shall be neatly arranged and bundled within the cabinet to the satisfaction of the Engineer. Each cable shall be marked with an identification number which corresponds to the number and description on the cabinet cable log.

In the case of an existing cabinet that is being modernized or modified, the new cables being installed shall be trained, bundled and labeled to the satisfaction of the Engineer. When working inside an existing cabinet, the Contractor shall minimize disturbance to existing cables and cabinet wiring. Any existing cables and cabinet wiring disturbed by the Contractor shall be re-trained, bundled, and/or labeled to the satisfaction of the Engineer.

The County shall not accept maintenance of the traffic signal installations until the requirements of this specification are satisfied. The cost for this work shall be considered incidental to the cost of the associated pay item.

#### **VENDOR REPRESENTATION**

Under this provision, the Engineer reserves the right to request the equipment vendor be present at the activation of new traffic equipment. Equipment covered under this provision includes signal heads, cabinets, controllers, amplifiers, preemption, video detection/monitoring, communication/transmission, fiber-optic/telemetry, radio, microwave, infra-red, illuminated signs, streetlights, push buttons, lighted crosswalks, uninterruptible power supplies, and any other new equipment being installed and activated.

This provision is in addition to the requirement contained herein that the Contractor provide a representative from the control equipment vendor to attend the traffic signal inspection for both permanent and temporary traffic signal "turn-ons".

Any costs associated with equipment vendor representation shall not be paid for separately, but shall be incidental to the cost of the associated traffic equipment being activated. Any unforeseen costs incurred by the Contractor to provide this representation shall not be the responsibility of the County.

#### **ELECTRIC CABLE.**

Delete "or stranded, and No. 12 or" from the last sentence of Article 1076.04 (a) of the "Standard Specifications".

The electric service cable shall have an XLP jacket. All other cable jackets shall be polyvinyl chloride, meeting the requirements of IMSA 19-1 or IMSA 20-1. The jacket color for signal cable shall be black. The jacket color for lead-in and communications cable shall be gray. All cabling between the signal cabinet and the signal heads shall be solid copper, not multi-stranded. Heat shrink splices shall be used according to the District 1 "Standard Traffic Signal Design Details".

**STEEL MAST ARM ASSEMBLY AND POLE**  
**STEEL COMBINATION MAST ARM ASSEMBLY AND POLE**

Add the following to Article 1077.03 of the "Standard Specifications":

The poles for all mast arms and combination mast arms, up to and including forty (40) feet in length, shall be manufactured with an eighteen (18)-inch bolt circle at the foundation base plate. The poles for all mast arms and combination mast arms forty-two (42) feet long and longer shall be manufactured with a twenty-one (21)-inch bolt circle.

Traffic signal mast arms shall be one-piece construction, unless otherwise approved by the Engineer. All mast arms, mast arm poles, luminaire arms, cast iron bases, and any exposed steel hardware shall be hot-dipped galvanized.

Luminaire arms shall be steel, and of the length shown on the plans. Luminaire arms over fifteen (15) feet in length shall be tapered, monotube style, with AASHTO 2001 wrap-around, gusset style connection.

Luminaires shall be "cobra head" style, with a minimum mounting height of forty-five (45) feet, and shall be paid for separately.

Stainless steel mesh screening shall be stainless steel banded to the anchor bolts, with a minimum 2-inch lap, to enclose the void between the top of the foundation and the base plate. The mesh screening shall have ¼-inch maximum opening and a minimum wire diameter of AWG NO. 16.

The base of the mast arm pole shall be protected by a Component Products bolt-on galvanized metal shroud or an approved equal.

**STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL).**  
**STEEL COMBINATION MAST ARM ASSEMBLY AND POLE (SPECIAL).**

Add the following to Article 1077.03 of the "Standard Specifications":

The poles for all mast arms and combination mast arms, up to and including forty (40) feet in length, shall be manufactured with an eighteen (18)-inch bolt circle at the foundation base plate. The poles for all mast arms and combination mast arms forty-two (42) feet long and longer shall be manufactured with a twenty-one (21)-inch bolt circle.

Ornamental bases for mast arm poles shall be either cast iron or cast aluminum. All mast arms, mast arm poles, luminaire arms, cast iron bases, and any exposed steel hardware shall be hot-dipped galvanized, and then powder-coated black by the supplier/manufacturer, as described below. Cast aluminum bases shall also be powder-coated black by the supplier/manufacturer, as described below.

All galvanized and aluminum exterior surfaces shall be coated with chip resistive epoxy resin primer applied via electrostatic spray equipment. The primer is to be applied at a minimum dry film thickness (DFT) of 3.0 mils with a minimum DFT of 6.0 mils applied to the lower 8 feet of the pole. The primer coat must be energy absorptive, and capable of achieving a rating of 10A under testing per ASTM (American Society for Testing and Materials) Procedure D3170, Standard Test Method for Chipping Resistance of Coatings.

The primed surfaces shall then be coated with a black TGIC Super Durable Polyester topcoat to a minimum dry film thickness of 3.0 mils. The topcoat must meet the requirements of AAMA (American Architectural Manufacturer's Association) 2604 for color and gloss retention properties.

Stainless steel mesh screening shall be stainless steel banded to the anchor bolts, with a minimum 2-inch lap, to enclose the void between the top of the foundation and the base plate. The mesh screening shall have ¼-inch maximum opening and a minimum wire diameter of AWG NO. 16.

All ornamental bases shall fit tightly around the poles, with little or no gap at the top of the ornamental base. Two-piece ornamental bases shall fit together tightly, with little or no gap between the two pieces. All bases shall fit securely on top of the foundation, and shall not easily move or wobble. All ornamental bases shall have an access hand hole, with a removable cover, and a minimum opening size of 200 square inches.

Pedestrian pushbutton stations shall be mounted to ornamental mast arm bases according to the following: The top and bottom of the station shall be secured by drilling, tapping, and installing a 3/8-inch stainless steel threaded bolt, lock washer, and hex nut. Do not use self-tapping screws. The pushbutton station shall be plumb. Spacers made of 3/4-inch aluminum conduit shall be installed behind the station.

Luminaire arms shall be steel, and of the length shown on the plans. Luminaire arms over fifteen (15) feet in length shall be tapered, monotube style, with AASHTO 2001 wrap-around, gusset style connection.

Luminaires shall be "cobra head" style, powder-coated black by the supplier/manufacturer, minimum mounting height shall be forty-five (45) feet, and shall be paid for separately.

All (Special) steel mast arm assemblies and poles (including combination mast arm assemblies) shall be manufactured and/or supplied by Sternberg Vintage Lighting, Valmont, Beacon or approved equal, according to the following:

- Round, tapered, 16-sharp fluted pole.
- Round, tapered, smooth, standard-curved, flange-connected, traffic signal mast arm
- Hamilton Series (6400D) ornamental base (Sternberg).
- MainStreet Series (200SJ) ornamental base (Beacon).

#### **TRAFFIC SIGNAL POST.**

Add the following to Article 1077.01 (d) of the "Standard Specifications":

Steel posts and cast iron bases shall be hot-dipped galvanized.

**TRAFFIC SIGNAL POST (SPECIAL).**

Add the following to Article 1077.01 of the "Standard Specifications":

All Traffic Signal Posts (Special) shall be sixteen (16) feet in height, extruded aluminum, unless otherwise specified on the plans. All ornamental bases for Traffic Signal Post (Special) shall be cast aluminum.

All Traffic Signal Posts (Special) and associated ornamental bases shall be assembled and powder-coated black at the factory. The powder-coated finish shall meet the requirements of STEEL MAST ARM ASSEMBLY AND POLE (SPECIAL). All exposed steel hardware shall be hot-dipped galvanized, and then powder-coated black.

Pedestrian pushbutton stations shall be mounted to ornamental signal posts according to the following: The top and bottom of the station shall be secured by drilling, tapping, and installing a 3/8-inch stainless steel threaded bolt. Do not use self-tapping screws. The pushbutton station shall be plumb. Spacers made of 3/4-inch aluminum conduit shall be installed behind the station.

All ornamental bases shall fit tightly around the poles, with little or no gap at the top of the ornamental base. Two-piece ornamental bases shall fit together tightly, with little or no gap between the two pieces. All bases shall fit securely on top of the foundation, and shall not easily move or wobble.

All Traffic Signal Posts (Special) and associated ornamental bases shall be manufactured and/or supplied by Sternberg Vintage Lighting, Valmont, Beacon, or approved equal, according to the following:

- Round, straight (non-tapered), five (5)-inch diameter, 12-flat fluted post.
- A ball center cap for the top of the post, instead of a tenon.
- Hamilton Series (5400D) ornamental base, approximately forty-three (43) inches tall. (Sternberg)
- MainStreet Series (100SJ) ornamental base, approximately forty-three (43) inches tall. (Beacon)

**INDUCTIVE LOOP DETECTOR**

Add the following to Article 1079.01 of the "Standard Specifications":

All new inductive loop detectors (amplifiers) shall have a liquid crystal display to view all detector operation, loop diagnostics, loop frequency, inductance, change of inductance readings, and programmable features. When rack space allows, new amplifiers shall be rack-mounted. When the detector rack is full, shelf-mounted amplifiers may be allowed. Shelf-mounted amplifiers shall utilize multi channels to minimize the required shelf space.

**ILLUMINATED SIGN, LED**

This work shall consist of furnishing and installing an illuminated sign with light emitting diodes.

The light emitting diode (LED) blank out signs shall be manufactured by National Sign & Signal Company, or an approved equal and consist of a weatherproof housing and door, LEDs and transformers.

The LED blank out sign shall provide the correct symbol and color for "NO LEFT TURN" OR "NO RIGHT TURN" indicated in accordance with the requirements of the "Manual on Uniform Traffic Control Devices". The message shall be formed by rows of LEDs.

The message shall be clearly legible and highly visible, under any lighting conditions, within a 15-degree cone centered about the optic axis. The sign face shall be 24 inches by 24 inches. The sign face shall be completely illegible when not illuminated. No symbol shall be seen under any ambient light condition when not illuminated.

All LEDs shall be T-1 ¾ and have an expected lamplife of 100,000 hours. Operating wavelengths will be Red-626nm, Amber-590nm, and Bluish/Green-505nm. Transformers shall be rated for the line voltage with Class A insulation and weatherproofing. The sign shall be designed for operation over a range of temperatures from -35F to +165 F (-37C to +75C).

The LED module shall include the message plate, high intensity LEDs and LED drive electronics. Door panels shall be flat black and electrical connections shall be made via barrier-type terminal strip. All fasteners and hardware shall be corrosion resistant stainless steel.

The housing shall be constructed of extruded aluminum. All corners and seams shall be heli-arc welded to provide a weatherproof seal around the entire case. Hinges shall be continuous full-length stainless steel. Signs shall have stainless steel hardware and provide tool free access to the interior of the sign. Doors shall be 0.125-inch thick extruded aluminum with a 3/16-inch x 1-inch neoprene gasket and sun hood. The sign face shall have a polycarbonate, matte clear, lexan face plate. Drainage shall be provided by four drain holes at the corners of the housing. The finish on the sign housing shall include two coats of exterior enamel applied after the surface is acid-etched and primed with zinc-chromate primer.

Mounting hardware shall be black polycarbonate or galvanized steel and similar to mounting Signal Head hardware and brackets specified herein.

Basis of Payment: This work shall be paid for at the unit price each for ILLUMINATED SIGN, LED.

**LED INTERNALLY ILLUMINATED STREET NAME SIGN**

This work shall consist of furnishing a street name sign which is internally illuminated with light emitting diodes, and installing the sign on a traffic signal mast arm or span wire.

The sign shall be manufactured by Traffic Signs, Inc., standard model, (with a J & J Electronics Inc, LED Light Engine), Carmanah Technologies (Model R409), or approved equivalent.

The sign shall display the designated street name clearly and legibly in the daylight hours without being energized. When energized, the entire surface of the sign panel shall be evenly illuminated, and the light transmission factor shall provide a letter to background brightness ratio adequate for nighttime legibility. The sign face/panels shall be 0.125-inch translucent, high-impact, UV resistant polycarbonate. All surfaces shall be free of blemishes in the plastics or coating that might impair the service or detract from the general appearance of the sign. The sign frame shall be painted black with a durable powder coated process.

Street name signs shall have double-sided message, with the following exception: At locations where one side of a particular sign will not be visible to vehicular traffic, such as a "T" intersection, that sign shall be single-sided. The street name/legend and border shall be as shown on the plans. The font shall be ClearviewHwy 5-W.

Both sides of each sign shall have legend and border made of 3M/Scotchlite Series 4090T translucent white diamond grade sheeting (DG<sup>3</sup>T), overlaid by 3M/Scotchlite Series 1177 transparent green, electronically cuttable film, or approved equivalent.

The sign shall be mounted on the mast arm three feet to the right of the furthest right signal head, as viewed by the approaching traffic.

Each sign shall be activated by a photocell mounted/installed on the side of the sign frame

The Manufacturer/Vendor shall supply shop drawings of the fixtures, sign, sign message and mounting hardware for approval. All hardware used to install the sign shall be in accordance with the manufacturer's recommendations.

Basis of Payment: This work will be paid for at the contract unit price each for furnishing and installing LED INTERNALLY ILLUMINATED STREET NAME SIGN, of the size specified, complete in place, including photocell and all related hardware, wiring, and connections required for proper operations.

#### **RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM**

This work shall consist of providing a revised Signal Coordination and Timing (SCAT) Report and implementing optimized timings to an existing previously optimized closed loop traffic signal system. This work is required due to the addition of a signalized intersection to an existing system or a modification of an existing signalized intersection which affects the quality of an existing system's operation. MAINTENANCE OF THE

SUBJECT INTERSECTION SHALL NOT BE TRANSFERRED TO THE COUNTY UNTIL THIS WORK IS COMPLETED AND ACCEPTED.

After the new signalized intersection is added or the existing signal is modified, the traffic signal system shall be re-optimized by an approved consultant. The Contractor shall contact the County Traffic Engineer at (847) 377-7000 for a listing of approved consultants.

A listing of existing signal equipment, interconnect information and existing phasing/timing patterns may be obtained from the Lake County Traffic Engineering Department, if available and as appropriate. The consultant shall consult with the County Traffic 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 re-optimization.

Traffic counts shall be taken at the subject intersection no sooner than 30 days after the traffic signals are approved for operation by the County Traffic Engineer. Seven day/twenty-four hour automatic traffic recorder counts will be required and 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 typical weekday from midday Monday to midday Friday, and if necessary, on the weekend. Additional manual turning movement counts may be necessary if heavy traffic flows exist during off peak hours. The turning movement counts shall identify cars, heavy vehicles, buses, and pedestrian movements.

A Capacity Analysis shall be conducted at the subject intersection to determine its level of service and degree of saturation. 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 with minor adjustments if necessary. Changes to the cycle lengths and offsets for the entire system may be required due to the addition/modification of the subject intersection. Both volume and occupancy shall be considered when developing the re-optimized timing program. For signal systems with existing or proposed Transit Signal Priority (TSP) systems (e.g. PACE buses), the consultant shall insure that TSP is included in the optimization. Signal optimization analyses shall be conducted utilizing SYNCHRO, PASSER II, TRANSYT 7F, SIGNAL 2000 or other appropriate approved computer software.

If the system is being re-optimized due to the addition of a signalized intersection, all the intersections shall be re-addressed according to the current standard of District One. The proposed signal timing plan shall be forwarded to LCDOT for review prior to implementation. The timing plan shall include a traffic responsive program and a time-of-day program which may be used as a back-up system. After downloading the system timings, the consultant shall make fine tuning adjustments to the timing in the field to alleviate observed adverse operating conditions and to enhance signal coordination.

The consultant shall furnish to LCDOT an original and two copies of the revised SCAT Report for the re-optimized system. The report shall contain the following: turning movement and automatic traffic recorder counts, capacity analyses for each count period, computer optimization analysis for each count period, proposed implementation plans and summaries including system description, analysis methodology, method of effectiveness comparison results and special recommendations and/or observations. Copies of the entire database including intersection displays and zone displays shall be furnished to LCDOT.

Basis of Payment: This work shall be paid for at the contract unit price per lump sum for RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM, which price shall be payment in full for performing all work described herein.

### **SIGNAL HEADS.**

Add the following to Section 1078 of the "Standard Specifications" to read:  
All vehicle signal and pedestrian signal heads shall provide 12-inch displays, with glossy black polycarbonate housings, with the following exception: At locations where existing yellow polycarbonate heads will remain, all new signal heads shall be yellow to match the existing ones. Connecting hardware and mounting brackets shall be polycarbonate, the same color as the heads, or galvanized. A corrosive 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. Where required, incandescent bulbs shall be manufactured by Duratest, Sylvania or an approved equal. Signal heads shall be positioned according to the District 1 "Standard Traffic Signal Design Details".

### **SIGNAL HEAD, LIGHT EMITTING DIODE (LED)**

This work shall consist of furnishing and installing a traffic signal head or pedestrian signal head with light emitting diodes (LED) of the type specified in the plan or retrofitting an existing traffic signal head with a traffic signal module or pedestrian signal module with LEDs as specified in the plans.

LED signal heads (All Face and Section Quantities), (All Mounting Types) shall conform fully to the requirements of Sections 880 and 881 and Articles 1078.01 and 1078.02 of the "Standard Specifications" for Road and Bridge Construction," and amended herein:

The LED signal modules shall be replaced or repaired if an LED signal module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery. LED signal modules which exhibit luminous intensities less than the minimum values specified in Table 1 of the ITE Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement (VTCSH) or show signs of entrance of moisture or contaminants within the first 60 months of the date of delivery shall be replaced or repaired. The manufacturer's written warranty for the LED signal modules shall be dated, signed by an Officer of the company and included in the product submittal to the County.

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, and shall not affect chromaticity.

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 in diameter. Additionally, the color shall be written out in ½-inch letters next to the symbol.

The LEDs utilized in the modules shall be AllnGaP technology for red, yellow, Portland orange (pedestrian) and white (pedestrian) indications, and GaN for green indications, and shall be the ultra bright type rated for 100,000 hours of continuous operation from -40°C to +74°C. Maximum power consumption for LED modules is per Table 2.

#### Retrofit Traffic Signal Module:

All other specifications apply unless specifically superceded in this section.

1. Each Retrofit module (12-inch circular or 12-inch arrow indications) 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.
2. 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.
3. 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 weatherproof after installation and connection.

#### 12-Inch Arrow Module:

All other specifications apply unless specifically superceded 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, Chapter 2 (Vehicle Traffic Control Signal Heads) for arrow indications.
2. The LEDs arrow indication shall be a solid display with a minimum of three (3) outlining rows of LEDs and at least one (1) fill row of LEDs.

#### 12-inch Programmed Visibility (PV) Module:

All other specifications apply unless specifically superceded in this section.

1. The module shall be designed and constructed to be installed in a PV signal housing without modification to the housing.
2. The LEDs shall be spread evenly across the module

#### 12-inch Pedestrian Module:

All other specifications apply unless specifically superceded in this section.

1. Each pedestrian signal LED module shall provide the ability to actuate the solid upraised hand and the solid walking person on one 12-inch section.
2. Two (2) pedestrian sections shall be installed. The top section shall be wired to illuminate only the upraised hand and the bottom section shall be the walking man.
3. "Egg Crate" type sun shields are not permitted. All figures must be a minimum of 9 inches in height and easily identified from a distance of 120-feet.
4. All pedestrian signals at an intersection shall be the same type and have the same display. No mixing of multiple types of pedestrian traffic signals will be permitted.

Basis of Payment.

This item shall be paid for at the contract unit price each for SIGNAL HEAD, LED, of the type specified, or PEDESTRIAN SIGNAL HEAD, LED, of the type specified, which price shall be payment in full for furnishing the equipment described above including signal head, LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for SIGNAL HEAD, LED of the type specified, RETROFIT, or PEDESTRIAN SIGNAL HEAD, LED, of the type specified, RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

The type specified will indicate the number of signal faces, the number of signal sections, and the method of mounting.

Table 2 Maximum Power Consumption (in Watts)

	Red		Yellow		Green	
	25°C	74°C	25°C	74°C	25°C	74°C
12 inch (300 mm) circular	11	17	22	25	15	15
12 inch (300 mm) arrow	9	12	10	12	11	11
	Hand-Portland Orange		Person-White			
Pedestrian Indication	6.2		6.3			

Table 3 Minimum Initial & Maintained Intensities for Arrow and Pedestrian Indications (in cd/m<sup>2</sup>)

	Red	Yellow	Green
Arrow Indication	5,500	11,000	11,000

**PEDESTRIAN COUNTDOWN SIGNAL HEAD, LIGHT EMITTING DIODE (LED)**

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 or retrofitting an existing pedestrian traffic signal head with a pedestrian countdown signal module with LEDs as specified in the plan.

PEDESTRIAN COUNTDOWN SIGNAL HEAD, LIGHT EMITTING DIODE, shall conform fully to the SIGNAL HEAD, LIGHT EMITTING DIODE specification, with the following modifications:

Pedestrian Countdown Signal Heads, including Retrofit type, shall not be used at signalized intersections where traffic signals and railroad warning devices are interconnected.

Pedestrian Countdown Signal Heads, including Retrofit type, shall measure 12 inches x 12 inches, with 9-inch high countdown numerals, and form the time display utilizing two rows of LEDs.

Pedestrian Countdown Signal Heads shall consist of two (2) 12-inch by 12-inch modules aligned vertically. The top module of the unit shall be an LED message-bearing surface supplied with overlapping full "HAND" and full "MAN" symbols that comply with the ITE Pedestrian Traffic Control Signal Indications (PTCSI) standard for these symbols. The bottom module of the unit shall house a LED countdown traffic signal consisting of a two digit numerical display ("00" to "99") a minimum of nine (9) inches in height. The counter shall begin countdown at the beginning of the pedestrian clearance interval as the pictogram of the hand starts flashing. The counter shall execute a countdown of the time, in seconds, of the pedestrian clearance interval synchronized with the controller and ending at (0) at the expiration of the clearance interval. The counter shall be blank at all other times.

Retrofit Pedestrian Countdown Signal Module:

The Retrofit module shall be applicable where two (2) LED pedestrian signal sections exist, each with the Upraised Hand and Walking Person overlaid with the top section wired to illuminate only the Upraised Hand and the bottom section wired to illuminate only the Walking Person. The top section shall be re-wired to provide illumination of either of the displays, depending on the interval or phase. The contractor shall remove the existing bottom pedestrian overlay module and install a new countdown module.

Basis of Payment.

This item shall be paid for at the contract unit price each for PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED, of the type specified, which shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of faces and the method of mounting.

When installed in an existing signal head, this item shall be paid for at the contract unit price each for PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED, RETROFIT, which price shall be payment in full for furnishing the equipment described above including LED(s) modules, all mounting hardware, and installing them in satisfactory operating condition.

**TRAFFIC SIGNAL BACKPLATE, LOUVERED, ALUMINUM.**

Replace the first sentence of Article 1078.03 of the "Standard Specifications" with "All backplates shall be aluminum" and louvered".

**VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION)**

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 Terra or approved equal video vehicle detection system at one signalized intersection. This item includes the Machine Vision Processor (MVP) sensors, a Terra Interface Panel (TIP), a Terra Access Point (TAP), and all necessary hardware, cable and accessories necessary to complete the installation in accordance with the manufacturer's specifications. The system shall also include a ten-inch color VGA monitor with BNC connector for video input.

The Autoscope Machine Vision Processor (MVP) is 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 Terra 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.

In order for the Traffic Engineer to manipulate detection zones and view the video signal over a high-speed connection, the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) must be connected to either the LCDOT Gigabit Ethernet network or a VIDEO TRANSMISSION SYSTEM.

If the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) is being connected to the Gigabit Ethernet network, then a LAYER II (DATA LINK) SWITCH and/or a LAYER III (NETWORK) SWITCH will be required. Layer II and Layer III switches shall be installed according to the plans, and shall be paid for separately.

If the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) is being connected to a new or existing VIDEO TRANSMISSION SYSTEM, then fiber-optic video/data transmitters and receivers may be required. Fiber-optic video/data transmitters and receivers are necessary whenever the VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) and the VIDEO TRANSMISSION SYSTEM are installed at separate signalized intersections. When required, fiber-optic video/data transmitters and receivers shall be installed according to the plans, and shall be included in the cost of this item. The VIDEO TRANSMISSION SYSTEM shall be paid for separately.

Basis of Payment: This item will be paid for at the contract unit price each for VIDEO DETECTION SYSTEM, (COMPLETE INTERSECTION) which price shall be payment in full for furnishing all associated equipment required, installing the system at one signalized intersection, and placing the system in operation to the satisfaction of the Engineer.

**REMOTE-CONTROLLED VIDEO SYSTEM**

This pay item shall include providing and installing a remote-controlled video system at a location designated by the Engineer. The remote-controlled video system shall be a PELCO Spectra IV SE Series Discreet Dome System or approved equal. This pay item shall include a color camera (minimum 35x optical zoom), dome assembly, all mounting hardware, connectors, cables, and related equipment necessary to complete the installation in accordance with the manufacturer's specifications.

The camera shall be installed as shown on the plans, either on the luminaire arm near the luminaire, or on the combination mast arm assembly pole, angled toward the center of the intersection. When installed on the pole, the camera shall be mounted with a 14-inch pendant arm with integral transformer / power supply (Pelco IWM24-GY or approved equal). When installed on the luminaire arm, the camera shall be installed with a 30-degree tilt-adjustable bracket, and the external power supply (Pelco WCS1-4 or approved equal) shall be installed on the pole. Cameras and external power supplies shall be installed with stainless steel straps

The contractor shall contact the Traffic Engineer prior to installing the Pelco camera and associated wiring, to receive final approval on the camera location

In order for the Traffic Engineer to control the camera remotely and view the video signal over a high-speed connection, the REMOTE-CONTROLLED VIDEO SYSTEM must be connected to either the LCDOT Gigabit Ethernet network or a VIDEO TRANSMISSION SYSTEM.

If the REMOTE-CONTROLLED VIDEO SYSTEM is being connected to the Gigabit Ethernet network, then a LAYER II (DATA LINK) SWITCH and/or a LAYER III (NETWORK) SWITCH will be required. Layer II and Layer III switches shall be installed according to the plans, and shall be paid for separately.

If the REMOTE-CONTROLLED VIDEO SYSTEM is being connected to a new or existing VIDEO TRANSMISSION SYSTEM, then fiber-optic video/data transmitters and receivers may be required. Fiber-optic video/data transmitters and receivers are necessary whenever the REMOTE-CONTROLLED VIDEO SYSTEM and the VIDEO TRANSMISSION SYSTEM are installed at separate signalized intersections. When required, fiber-optic video/data transmitters and receivers shall be installed according to the plans, and shall be included in the cost of this item. The VIDEO TRANSMISSION SYSTEM shall be paid for separately.

Basis of Payment: This item will be paid for at the contract unit price each for REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for furnishing all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer.

**CAMERA MOUNTING ASSEMBLY.**

This work shall consist of modifying an existing traffic signal mast arm pole to accommodate an extension pole suitable for mounting a CCTV Camera. The pole extension shall be a 20-foot long, 4-inch diameter, Schedule 80 galvanized steel pipe and fastened to the existing mast arm pole with adjustable, galvanized steel clamps as indicated in the plans. The exposed wires shall be trained into a drip loop and protected with black plastic spiral cable wrap.

Basis of Payment: This work shall be paid for at the contract unit price each for CAMERA MOUNTING ASSEMBLY, which shall include all necessary mounting hardware, labor, and incidentals necessary to securely fasten the assembly to an existing pole and placing the camera in operation to the satisfaction of the Engineer. The camera, cables, connectors, and related equipment shall be paid for separately as part of REMOTE-CONTROLLED VIDEO SYSTEM.

#### VIDEO TRANSMISSION SYSTEM

This specification sets forth the minimum requirements for a video transmission system that allows a user to transmit video output from multiple cameras to a remote location, via video transmitter(s) and a high-speed communication link.

The VIDEO TRANSMISSION SYSTEM may be installed in either the intersection traffic signal cabinet or in the VIDEO COMMUNICATIONS CABINET. The Cabinet shall be paid for separately.

The VIDEO TRANSMISSION SYSTEM may include the relocation of existing video transmitter(s), ISDN modems, and/or high-speed Internet modem(s) to a new traffic signal cabinet. The relocation of such existing equipment to a new traffic signal cabinet shall be performed as directed by the Engineer and included in the cost of the VIDEO TRANSMISSION SYSTEM. Any item damaged during removal, storage, or reinstallation shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

#### System Components

The system shall consist of video transmitter(s) (ADPRO Fast Tx or approved equal), high-speed Internet modem(s), and related connection cables.

#### High-Speed Internet Modem

The high-speed Internet modem shall be provided by the County or the Internet Provider.

Basis of Payment: This item will be paid for at the contract unit price each for VIDEO TRANSMISSION SYSTEM, which price shall be payment in full for furnishing and/or relocating all associated equipment required, installing the system complete and in place, and placing the system in operation to the satisfaction of the Engineer

### LAYER II (DATA LINK) SWITCH

This specification sets forth the minimum requirements for a layer II Ethernet switch that will transmit data from one traffic signal cabinet to another traffic signal cabinet containing a layer II switch or a layer III (Network) switch. The layer II switch shall be a Cisco Catalyst 2955 Series Intelligent Ethernet Switch, or approved equal.

The Layer II (Data Link) Switch shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

The layer II switch and its power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

If the layer II switch is interconnected to other signalized intersections that deploy video detection without the use of switches, this pay item shall then also include all necessary video multiplexers, video and data transmitters, and all necessary connections for proper video/data communications.

Basis of Payment: This item will be paid for at the contract unit price each for LAYER II (DATA LINK) SWITCH, which price shall be payment in full for furnishing and installing the switch, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The VIDEO ENCODER, MEDIA CONVERTERS, and TERMINAL SERVERS shall be paid for separately.

### LAYER III (NETWORK) SWITCH

This specification sets forth the minimum requirements for a layer III switch that will transmit video data from one traffic signal cabinet to another traffic signal cabinet or to another location having a layer III switch. The layer III switch shall be a Cisco Catalyst 3560 Series Intelligent Ethernet Switch, or approved equal.

The Layer III (Network) Switch shall be procured from Delcan, the County's Passage engineering consultant. Delcan shall program this equipment for the appropriate location in the County's communication network.

The layer III switch shall be mounted to the 19-inch equipment rack inside the cabinet. The power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

If the layer III switch is interconnected to other signalized intersections that deploy video detection without the use of switches, this pay item shall then also include all necessary video multiplexers, video and data transmitters, and all necessary connections for proper video/data communications.

Basis of Payment: This item will be paid for at the contract unit price each for LAYER III (NETWORK) SWITCH, which price shall be payment in full for furnishing and installing the switch, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The VIDEO ENCODER, LAYER III FIBER OPTIC TRANSCEIVER MODULES, MEDIA CONVERTERS, and TERMINAL SERVERS shall be paid for separately.

#### VIDEO ENCODER

This specification sets forth the minimum requirements for a video encoder that will transmit video data from one traffic signal cabinet to another traffic signal cabinet or to another location having a layer three switch.

The video encoder shall be an Optelecom Model C-40 MPEG-4 video encoder/decoder, or an Optelecom Model C-44 E-MC 4-channel MPEG-4 encoder, as shown on the plans, or approved equivalent. Other video encoder/decoders submitted for approval must be compatible with the Lake County Passage Advanced Traffic Management System (ATMS) software and VideoLAN VLC Media Player Release 0.8.6D or later.

The video encoder and its power supply shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

Basis of Payment: This item will be paid for at the contract unit price each for VIDEO ENCODER, which price shall be payment in full for furnishing and installing the encoder, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

#### LAYER III FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit Ethernet switch. The module shall be a small form pluggable (SFP), long distance, single mode transceiver, Cisco GLC-LH-SM, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans.

Basis of Payment: This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

#### LAYER III FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, EXTRA LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit ethernet switch. The module shall be a small form pluggable (SFP), extra-long distance, single mode transceiver, Cisco GLC-ZX-SM, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans.

Basis of Payment: This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, SFP TYPE, EXTRA LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

#### LAYER III FIBER OPTIC TRANSCEIVER MODULE, GBIC TYPE, LONG DISTANCE

This specification sets forth the minimum requirements for a fiber optic transceiver module that plugs into a Cisco layer III gigabit ethernet switch. The module shall be a Gigabit Interface Converter (GBIC) type, long distance, single mode transceiver, Cisco WS-G5486, or approved equivalent. The transceiver shall be installed in the Cisco layer III switch at the location shown on the plans. This type of transceiver module is intended for use with earlier models of Cisco layer III switches.

Basis of Payment: This item will be paid for at the contract unit price each for FIBER OPTIC TRANSCEIVER MODULE, GBIC TYPE, LONG DISTANCE, which price shall be payment in full for furnishing and installing the module, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

#### MEDIA CONVERTER

This specification sets forth the minimum requirements for an unmanaged Ethernet switch that performs copper-to-fiber media conversion and 10Mbps to 100Mbps speed conversion.

The media converter shall be a Ruggedcom RMC40 Series, (Model RMC40-HI-C200) four-port, unmanaged Ethernet switch, or approved equivalent. The power supply shall be the HI voltage type (85-264VAC) and ports 3 and 4 shall be for single-mode fiber with SC connectors.

The media converter shall be mounted to either a standard DIN rail or an equipment mounting channel in the cabinet. The power supply shall be hard-wired to the cabinet power, not plugged into one of the traffic signal cabinet power outlets.

Basis of Payment: This item will be paid for at the contract unit price each for MEDIA CONVERTER, which price shall be payment in full for furnishing and installing the media converter, and all necessary connectors, cables, fiber optic jumpers, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

### TERMINAL SERVER

This specification sets forth the minimum requirements for a terminal server that will transmit signal controller data from one or more traffic signal controllers onto the Lake County PASSAGE Gigabit Ethernet network.

The terminal server shall be a Digi PortServer TS 4 four-port serial-to-Ethernet device, or approved equivalent, installed at the location shown on the plans. The terminal server shall be properly configured for its location within the Lake County PASSAGE Network, and for proper communication with the signal equipment being connected to it.

Basis of Payment: This item will be paid for at the contract unit price each for TERMINAL SERVER, which price shall be payment in full for furnishing, installing, and configuring the terminal server, and all necessary connectors, cables, hardware, software, other peripheral equipment, and placing it in operation to the satisfaction of the Engineer.

### VIDEO COMMUNICATIONS CABINET.

This specification sets forth the minimum requirements for a video communications cabinet to be installed at the location(s) shown in the plans.

The Video Communications Cabinet shall be a Model 332 (Type 170) Controller Cabinet, with heat exchanger, or approved equal. The heat exchanger shall be thermostatically controlled to maintain the temperature between 32°F and 122°F within the enclosure. The cabinet shall be constructed of 0.125"-thickness, alloy-5052 sheet aluminum. The surface shall have a smooth, natural aluminum mill finish. The cabinet shall measure 24" wide x 30" deep x 55" high.

The communications cabinet shall have front and rear doors of NEMA type 3R construction with cellular neoprene gasket that is rain tight. Door hinges shall be continuous 14-gauge stainless steel and shall be secured with ¼-20 stainless steel carriage bolts. Standard equipment shall include a three-point locking system that secures the door at the top, bottom and center. A corbin lock with two keys shall also be furnished. The front and rear doors shall be equipped with a two-position doorstop, one at 90° and one at 120°. Door locking rods are ¼" x ¾" aluminum turned edgeways with 1" nylon rollers. Door handles shall be cast aluminum.

The cabinet shall be base mounted and equipped with inside flanges and anchoring holes in the front and back of the cabinet for anchoring to a base.

The cabinet shall be equipped with a 19" Electronic Industries Association (EIA) rack using 1.75" hole spacing for the purpose of mounting rack-mountable cabinet equipment. The cabinet shall include a fiber optic connector housing, Corning Cable Systems CCH-04U, or approved equal, and a splice housing, Corning Cable Systems CSH-03U, or approved equal, mounted on the 19" rack.

The cabinet shall also be equipped with a CCTV Power Distribution Assembly and a pull-out drawer/ shelf assembly.

The heat exchanger handles the air inside the communication cabinet, as necessary, to maintain the equipment within the desired temperature range. Therefore, the cabinet shall be fully enclosed, with no louvers in any doors or side panels. No fans or thermostats shall be installed in the communication cabinet.

A power panel shall be included with the cabinet and shall include the following:

- 50-amp circuit breaker. This circuit breaker shall supply power to all devices in the cabinet.
- The main breaker shall be thermal magnetic type, U.L. listed for HACR service, with a minimum of 20,000 amp interrupting capacity.
- Two 15-amp load breakers with minimum 10,000 amp interrupting capacity.
- Two 20-amp load breakers with minimum 10,000 amp interrupting capacity.
- Atlantic Scientific ZoneIT Model 91391 base station, Model 91375 ZoneIT pluggable module (50kA rating) surge arrester, with LED status indicators, or approved equivalent.
- A 15-position neutral bus bar capable of connecting three #12 wires per position.
- A 7-position ground bus bar capable of connecting three #12 wires per position.
- A NEMA type 5-15R GFI convenience outlet.
- A power supply with input voltage AC100-120/220-240V (switchable) 47-63 Hz, output voltage 24VDC (+5%, -1%), overload protection, and minimum operating temperature range -10° to +60°C. The power supply must be compatible with Cisco Catalyst 2955 Series switch.

The heat exchanger shall be mounted on the side of the communications cabinet and conform to the following specifications.

- Maximum dimensions of 47 inches high x 15 inches wide x 11 inches deep
- The unit shall provide closed-loop system cooling and heating. (Heater option shall be included with the unit.)
- Unit shall be fully gasketed and maintain the NEMA 3R enclosure rating
- Shall utilize a high efficiency, convoluted, refrigerant-free, aluminum heat transfer element
- Shall operate under maximum enclosure temperature of 150°F and maximum ambient temperature of 131°F
- The unit shall dissipate a minimum of 54 Watts per °F
- Shall operate on 115 VAC, 60 Hz

- The heat exchanger shall be hard-wired to the communications cabinet power supply.
- Unit shall be UL listed

Basis of Payment: This item will be paid for at the contract unit price each for VIDEO COMMUNICATIONS SYSTEM AND CABINET, which price shall be payment in full for furnishing all associated equipment and labor, and installing the cabinet as shown on the plans and to the satisfaction of the Engineer. The Layer III switch, fiber optic splices and terminations, the video transmission system, if applicable, and the concrete foundation for the cabinet shall be paid for separately.

### WIRELESS TRANSMISSION SYSTEM

This work shall consist of the installation of a new node on the Lake County PASSAGE wireless network. This item includes the radio transceiver, directional antenna, power injector, associated cables / wiring, and all mounting hardware.

The WIRELESS TRANSMISSION SYSTEM includes:

- One (1) Cisco Aironet 1520 Series Lightweight Outdoor Access Point (Model AIR-LAP1522AG-A-K9) radio transceiver, or approved equivalent.
- One (1) Huber + Suhner Planar Antenna SPA 5600/9/23/0/V, 5150-5875 MHz, 23dBi, or approved equivalent.
- One (1) Cisco Aironet Model AIR-PWRINJ1500-2 power injector, or approved equivalent.
- RF cable between the radio transceiver and the antenna (N connectors).
- Power wiring from the power injector to the circuit breaker.
- All mounting hardware.

All components of this item shall be installed as shown on the plans. The radio transceiver and antenna shall be installed as high as possible on the mast arm assembly pole. The antenna shall be directed / aimed at another antenna on the County's wireless system, (e.g. aimed at a sector antenna on a water tower), as shown on the plans and as directed by the Engineer. The power injector shall be installed inside the traffic signal cabinet.

Basis of Payment: This item will be paid for at the contract unit price each for WIRELESS TRANSMISSION SYSTEM, which price shall be payment in full for furnishing and installing the radio transceiver, power injector, antenna, and all associated connectors, cables, hardware, and other peripheral equipment, and placing it in operation to the satisfaction of the Engineer. The Outdoor Rated Network Cable from the radio to the traffic signal cabinet shall be paid for separately.

### RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION).

This work shall consist of the removal, storage, and relocation of an existing video detection system (complete intersection) from one traffic signal installation (temporary or permanent) to another traffic signal installation (temporary or permanent). This item

shall also include the relocation of the remote-controlled video system according to the plans.

The video detection system (complete intersection) shall be removed and relocated as shown in the plans. Any damage sustained to the video detection system during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

Basis of Payment: This item will be paid for at the contract unit price each for RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION), which price shall be payment in full for disconnecting the existing video detection system, remote-controlled video system, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

**RELOCATE EXISTING REMOTE-CONTROLLED VIDEO SYSTEM.**

This work shall consist of the removal, storage, and relocation of an existing remote-controlled video system from one traffic signal installation (temporary or permanent) to another traffic signal installation (temporary or permanent). This pay item shall be used when only the remote-controlled video system is being relocated. This pay item shall not be used when the remote-controlled video system is being relocated as part of RELOCATE EXISTING VIDEO DETECTION SYSTEM (COMPLETE INTERSECTION).

The remote-controlled video system shall be removed and relocated as shown in the plans. Any damage sustained to the remote-controlled video system during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

Basis of Payment: This item will be paid for at the contract unit price each for RELOCATE EXISTING REMOTE-CONTROLLED VIDEO SYSTEM, which price shall be payment in full for disconnecting the existing remote-controlled video system, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

**RELOCATE EXISTING SWITCH.**

This work shall consist of the removal, storage, and relocation of an existing layer two or layer three switch from one traffic signal installation to another traffic signal installation.

The switch shall be removed and relocated as shown in the plans. Any damage sustained to the switch during removal, storage, transport, and/or reinstallation operations shall be repaired or replaced in kind to the satisfaction of the Engineer at the Contractor's expense.

Basis of Payment: This item will be paid for at the contract unit price each for RELOCATE EXISTING SWITCH, which price shall be payment in full for disconnecting

the existing switch, packaging/storing it, transporting it, and relocating it to the new location complete and operating to the satisfaction of the Engineer.

#### **ELECTRIC CABLE IN CONDUIT, COAXIAL**

This work shall consist of furnishing and installing a Belden 1694A RG-6/U Type Digital Coaxial Cable or approved equal. The cable shall be a 75-ohm coaxial cable with 18 AWG solid bare copper conductor, tinned copper braided shield (95% min), and black polyvinyl chloride jacket. The nominal outside diameter shall be 0.274 inches. Amphenol 31-71032 (or equivalent) BNC plug connectors shall be used at both the PTZ camera and traffic signal cabinet ends of the cable. An Amphenol CLT-2 crimping tool is required for the termination. No splices shall be allowed in the cable between the PTZ camera and the traffic signal cabinet.

Basis of Payment: This work will be paid for at the contract unit price per foot for ELECTRIC CABLE IN CONDUIT, COAXIAL, which price shall be payment in full for furnishing the material, making all electrical connections and installing the cable complete, measured as specified herein.

#### **OUTDOOR RATED NETWORK CABLE**

This work shall consist of furnishing and installing a network cable from the traffic signal cabinet to the associated field device shown on the plans.

The outdoor rated network cable shall be a black Category 6e cable, meeting the TIA/EIA 568-B.2 telecommunication standards. The cable shall be composed of 4 pairs of 24AWG solid bare copper and shall be flooded with a gel or grease compound to prevent moisture in the cable. The outer jacket shall be made of Polyethylene (PE) that is ultraviolet (UV) resistant and abrasion resistant. The cable shall be capable of performing from -40 °C to 70 °C.

Each end of the cable shall be terminated with an RJ-45 connector installed according to the TIA/EIA 568B standard.

The work shall be performed according to the applicable portions of Section 873 of the "Standard Specifications", and details as shown on the plans.

Basis of Payment: This work will be paid for at the contract unit price per foot for OUTDOOR RATED NETWORK CABLE. The unit price shall include furnishing and installing the cable, and making all connections necessary for proper operation. Furnishing and installing the RJ-45 connectors to the OUTDOOR RATED NETWORK CABLE shall be incidental to this pay item.

**DISTRICT ONE**  
**TRAFFIC SIGNAL SPECIFICATIONS**

Effective: May 22, 2002

Revised: November 1, 2009

These Traffic Signal Special Provisions and the "District One Standard Traffic Signal Design Details" supplement the requirements of the State of Illinois "Standard Specifications for Road and Bridge Construction." The intent of these Special Provisions is to prescribe the materials and construction methods commonly used for traffic signal installations. All material furnished shall be new. The locations and the details of all installations shall be as indicated on the Plans or as directed by the Engineer. Traffic signal construction and maintenance work shall be performed by personnel holding IMSA Traffic Signal Technician Level II certification. The work to be done under this contract consists of furnishing and installing all traffic signal work as specified in the Plans and as specified herein in a manner acceptable and approved by the Engineer.

**SECTION 720 SIGNING**

## MAST ARM SIGN PANELS

Add the following to Article 720.02 of the Standard Specifications:

Signs attached to poles or posts (such as mast arm signs) shall have mounting brackets and sign channels which are equal to and completely interchangeable with those used by the District Sign Shops. Signfix Aluminum Channel Framing System is currently recommended, but other brands of mounting hardware are acceptable based upon the Department's approval.

## DIVISION 800 ELECTRICAL

### SUBMITTALS.

Revise Article 801.05 of the Standard Specifications to read:

The Contractor shall provide:

- a. All material approval requests shall be submitted at the preconstruction meeting, including major traffic signal items listed in the table in Article 801.05.
- b. All material or equipment which are similar or identical shall be the product of the same manufacturer, unless necessary for system continuity. Traffic signal materials and equipment shall bear the U.L. label whenever such labeling is available.
- c. Seven (7) copies of a letter from the Traffic Signal Contractor on company letterhead listing the contract number or permit number, project location/limits, pay item description, pay code number, manufacturer's name and model numbers of the proposed equipment and stating that the proposed equipment meets all contract requirements. The letter will be reviewed by the Traffic Design Engineer to determine whether the equipment to be used is approvable.
- d. Seven (7) copies of shop drawings for mast arm poles and assemblies, including combination mast arm poles, are required. A minimum of two (2) copies of all other material catalog cuts are required. Submittals for equipment and materials shall be complete. Partial or incomplete submittals will be returned without review.
- e. Certain non-standard mast arm poles and assemblies will require additional review from IDOT's Central Office. Examples include ornamental/decorative and non-standard length mast arm pole assemblies. The Contractor shall account for the additional review time in his schedule.
- f. The contract number or permit number, project location/limits and corresponding pay code number must be on each sheet of the letter, material catalog cuts and mast arm poles and assemblies drawings.
- g. Where certifications and/or warranties are specified, the information submitted for approval shall include certifications and warranties. Certifications involving inspections, and/or tests of material shall be complete with all test data, dates, and times.
- h. After the Engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status as 'Approved', 'Approved-As-Noted', 'Disapproved', or 'Information Only'. Since the Engineer's review is for conformance with the design concept

only, it is the Contractor's responsibility to coordinate the various items into a working system as specified. The Contractor shall not be relieved from responsibility for errors or omissions in the shop, working, layout drawings, or other documents by the Department's approval thereof. The Contractor must still be in full compliance with contract and specification requirements.

- i. All submitted items reviewed and marked 'APPROVED AS NOTED', or 'DISAPPROVED' are to be resubmitted in their entirety, unless otherwise indicated within the submittal comments, with a disposition of previous comments to verify contract compliance at no additional cost to the contract.
- j. Exceptions, Deviations and Substitutions. In general, exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.

#### **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 facilities 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, or the Municipality in which they are located. Once the Contractor has begun any work on any portion of the project, all traffic signals within the limits of this contract or those which have the item "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," shall become the full responsibility of the Contractor. Automatic Traffic Enforcement equipment is not owned by the State and the Contractor shall not be responsible for maintaining it during construction. The Contractor shall supply the engineer and

the Department's Electrical Maintenance Contractor a 24-hour emergency contact name and telephone number.

- b. When the project has a pay item for "Maintenance of Existing Traffic Signal Installation," "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation," the Contractor must notify both the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, of their intent to begin any physical construction work on the Contract or any portion thereof. This notification must be made a minimum of seven (7) working days prior to the start of construction to allow sufficient time for inspection of the existing traffic signal installation(s) and transfer of maintenance to the Contractor. If work is started prior to an inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection. The Contractor will become responsible for repairing or replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic signal. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted.
- c. Contracts such as pavement grinding or patching which result in the destruction of traffic signal loops do not require maintenance transfer, but require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Area Traffic Signal Maintenance and Operations Engineer at (847) 705-4424 and the Department's Electrical Maintenance Contractor, at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection. Damaged Automatic Traffic Enforcement equipment, including cameras, detectors, or other peripheral equipment, shall be replaced by others, per Permit agreement, at no cost to the contract. See additional requirements in these specifications under Inductive Loop Detector.
- d. The Contractor is advised that the existing and/or temporary traffic signal installation must remain in operation during all construction stages, except for the most essential down time. Any shutdown of the traffic signal installation, which exceeds fifteen (15) minutes, must have prior approval of the Engineer. Approval to shutdown the traffic signal installation will only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns shall not be allowed during inclement weather or holiday periods.
- e. The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Department, the Department's Electrical Maintenance Contractor or the public, shall be investigated and repairs begun within one hour. Failure to provide this service will result in liquidated damages of \$500 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor.

Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of \$500 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The District's Electrical Maintenance Contractor may inspect any signaling device on the Department's highway system at any time without notification.

- f. 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.

#### **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 whatsoever shall be repaired with new equipment provided by the Contractor at no additional cost to the Contract and or owner of the traffic signal system, all as approved by the Engineer. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted. Cable splices outside the controller cabinet shall not be allowed.

Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, and peripheral equipment, damaged or not operating properly from any cause whatsoever, 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 vendor prior to the Department's "turn-on" field inspection. If in the event the Engineer determines work is not complete and the inspection will require more than two (2) hours to complete, the inspection shall be canceled and the Contractor will be required to reschedule at another date. The maintenance of the traffic signals will not be accepted until all punch list work is corrected and re-inspected.

When the road is open to traffic, except as otherwise provided in Section 850 of the Standard Specifications, the Contractor may request a turn-on and inspection of the completed traffic signal installation at each separate location. This request must be made to the Area Traffic

Signal Maintenance and Operations Engineer at (847) 705-4424 a minimum of seven (7) working days prior to the time of the requested inspection. The Department will not grant a field inspection until notification is provided from the Contractor that the equipment has been field tested and the intersection is operating according to Contract requirements. The Department's facsimile number is (847) 705-4089. The Contractor must invite local fire department personnel to the turn-on when Emergency Vehicle Preemption (EVP) is included in the project. 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 direct traffic at the time of testing.

The Contractor shall provide a representative from the control equipment vendor's office to attend the traffic signal inspection for both permanent and temporary traffic signal turn-ons. Upon demonstration that the signals are operating and all work is completed in accordance with the Contract and to the satisfaction of the Engineer, the Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each traffic signal installation will assume the maintenance upon successful completion of this inspection.

The District requires the following from the Contractor at traffic signal turn-ons.

1. One set of signal plans of record with field revisions marked in red ink.
2. Written notification from the Contractor and the equipment vendor of satisfactory field testing.
3. A knowledgeable representative of the controller equipment supplier shall be required at the traffic signal turn-on. The representative shall be knowledgeable of the cabinet design and controller functions.
4. A copy of the approved material letter.
5. One (1) copy of the operation and service manuals of the signal controller and associated control equipment.
6. Five (5) copies 11" x 17" (280 mm X 430 mm) of the cabinet wiring diagrams.
7. The controller manufacturer shall supply a printed form, not to exceed 11" x 17" (280 mm X 430 mm) for recording the traffic signal controller's timings; backup timings; coordination splits, offsets, and cycles; TBC Time of Day, Week and Year Programs; Traffic Responsive Program, Detector Phase Assignment, Type and Detector Switching; and any other functions programmable from the keyboard. The form shall include a location, date, manufacturer's name, controller model and software version. The form shall be approved by the Engineer and a minimum of three (3) copies must be furnished at each turn-on. The manufacturer must provide all programming information used within the controller at the time of turn-on.

Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal "turn on." If approved, traffic signal acceptance shall be verbal at the

“turn on” inspection followed by written correspondence from the Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until Departmental acceptance is granted.

All equipment and/or parts to keep the traffic signal installation operating shall be furnished by the Contractor. No spare traffic signal equipment is available from the Department.

All punch list work shall be completed within two (2) weeks after the final inspection. The Contractor shall notify the Electrical Maintenance Contractor to inspect all punch list work. Failure to meet these time constraints shall result in liquidated damage charges of \$500 per month per incident.

All cost of work and materials required to comply with the above requirements shall be included in the pay item bid prices, under which the subject materials and signal equipment are paid, and no additional compensation will be allowed. Materials and signal equipment not complying with the above requirements shall be subject to removal and disposal at the Contractor's expense.

#### LOCATING UNDERGROUND FACILITIES.

Revise Section 803 to the Standard Specifications to read:

If this Contract requires the services of an Electrical Contractor, the Contractor shall be responsible at his/her own expense for locating existing IDOT electrical facilities prior to performing any work. If this Contract does not require the services of an Electrical Contractor, the Contractor may request one free locate for existing IDOT electrical facilities from the District One Electrical Maintenance Contractor prior to the start of any work. Additional requests may be at the expense of the Contractor. The location of underground traffic facilities does not relieve the Contractor of their responsibility to repair any facilities damaged during construction at their expense.

The exact location of all utilities shall be field verified by the Contractor before the installation of any components of the traffic signal system. For locations of utilities, 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, trench and backfill, etc. All roadway surfaces such as shoulders, medians, sidewalks, pavement, etc. shall be replaced in kind. All damage to mowed lawns shall be replaced with an approved sod, and all damage to unmowed fields shall be seeded. All brick pavers disturbed in the work area shall be restored to their original configuration or 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.

### ELECTRIC SERVICE INSTALLATION.

Revise Section 805 of the Standard Specifications to read:

#### Description.

This work shall consist of all materials and labor required to install, modify, or extend the electric service installation. All installations shall meet the requirements of the details in the "District One Standard Traffic Signal Design Details" and applicable portions of the Specifications.

#### General.

The electric service installation shall be the electric service disconnecting means and it shall be identified as suitable for use as service equipment.

The electric utility contact information is noted on the plans and represents the current information at the time of contract preparation. The Contractor must request in writing for service and/or service modification within 10 days of contract award and must follow-up with the electric utility to assure all necessary documents and payment are received by the utility. The Contractor shall forward copies of all correspondence between the contractor and utility company. The service agreement and sketch shall be submitted for signature to the Traffic Program's engineer.

#### Materials.

- i. 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.
- j. Enclosures.
  1. Pole Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 4X, unfinished single door design, fabricated from minimum 0.080-inch (2.03 mm) thick Type 5052 H-32 aluminum. Seams shall be continuous welded and ground smooth. Stainless steel screws and clamps shall secure the cover and assure a watertight seal. The cover shall be removable by pulling the continuous stainless steel hinge pin. The cabinet shall have an oil-resistant gasket and a lock kit shall be provided with an internal O-ring in the locking mechanism assuring a watertight and dust-tight seal. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 14-inches (350 mm) high, 9-inches (225 mm) wide and 8-inches (200 mm) in depth is required. The cabinet shall be channel mounted to a wooden utility pole using assemblies recommended by the manufacturer.
  2. Ground Mounted Cabinet. The cabinet shall be UL 50, NEMA Type 3R unfinished single door design with back panel. The cabinet shall be fabricated from Type 5052 H-32 aluminum with the frame and door 0.125-inch (3.175 mm) thick, the top 0.250-inch (6.350 mm) thick and the bottom 0.500-inch (12.70 mm) thick. Seams shall be continuous welded and ground smooth. The door and door opening shall be double flanged. The door shall be approximately 80% of the front surface, with a full length tamperproof stainless steel .075-inch (1.91 mm) thick hinge bolted to the cabinet with stainless steel carriage bolts and nylocks nuts. The locking mechanism

shall be slam-latch type with a keyhole cover. The cabinet shall be sized to adequately house all required components with extra space for arrangement and termination of wiring. A minimum size of 40-inches (1000 mm) high, 16-inches (400 mm) wide and 15-inches (375 mm) in depth is required. The cabinet shall be mounted upon a square Type A concrete foundation as indicated on the plans. The foundation is paid for separately.

- k. 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.
- l. 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.
- m. 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.
- n. 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.
- o. 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.
- p. 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.

- d. 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.
- e. 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.

- f. 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.

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. See IDOT District One Traffic Signal detail plan sheets for additional information.

The grounding electrode system shall include a ground rod installed with each traffic signal controller concrete foundation and all mast arm and post concrete foundations. An additional ground rod will be required at locations where measured resistance exceeds 25 ohms. Ground rods are included in the applicable 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).

- (d) 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.
- (e) The equipment grounding conductor shall be green color coded. The following is in addition to Article 801.04 of the Standard Specifications.
1. Equipment grounding conductors shall be bonded to the grounded conductor (neutral conductor) only at the Electric Service Installation. The equipment grounding conductor is paid for separately and shall be continuous. The Earth shall not be used as the equipment grounding conductor.
  2. Equipment grounding conductors shall be bonded, using a Listed grounding connector, to all traffic signal mast arm poles, traffic signal posts, pedestrian posts, pull boxes, handhole frames and covers, 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 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.

3. All metallic and non-metallic raceways containing traffic signal circuit runs shall have a continuous equipment grounding conductor, except raceways containing only detector loop lead-in circuits, circuits under 50 volts and/or fiber optic cable will not be required to include an equipment grounding conductor.
  4. Individual conductor splices in handholes shall be soldered and sealed with heat shrink. When necessary to maintain effective equipment grounding, a full cable heat shrink shall be provided over individual conductor heat shrinks.
- (f) The grounding electrode conductor shall be similar to the equipment grounding conductor in color coding (green) and size. The grounding electrode conductor is used to connect the ground rod to the equipment grounding conductor and is bonded to ground rods via exothermic welding, listed pressure connectors, listed clamps or other approved listed means.

#### **GROUNDING EXISTING HANDHOLE FRAME AND COVER.**

##### Description.

This work shall consist of all materials and labor required to bond the equipment grounding conductor to the existing handhole frame and handhole cover. All installations shall meet the requirements of the details in the "District One Standard Traffic Signal Design Details," and applicable portions of the Standard Specifications and these specifications.

The equipment grounding conductor shall be bonded to the handhole frame and to the handhole cover. Two (2) ½-inch diameter x 1 ¼-inch long hex-head stainless steel bolts, spaced 1.75-inches apart center-to-center shall be fully welded to the frame and to the cover to accommodate a heavy duty Listed grounding compression terminal (Burdny type YGHA or approved equal). The grounding compression terminal shall be secured to the bolts with stainless steel split-lock washers and nylon-insert locknuts.

Welding preparation for the stainless steel bolt hex-head to the frame and to the cover shall include thoroughly cleaning the contact and weldment area of all rust, dirt and contaminants. 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.

### **COILABLE NON-METALLIC CONDUIT.**

#### Description.

This work shall consist of furnishing and installing empty coilable non-metallic conduit (CNC) for detector loop raceways.

#### 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.

### **HANDHOLES.**

Add the following to Section 814 of the Standard Specifications:

All handholes shall be concrete, poured in place, with inside dimensions of 21-1/2 inches (549mm) minimum. Frames and lid openings shall match this dimension. The cover of the handhole frame shall be labeled "Traffic Signals" with legible raised letters.

For grounding purposes the handhole frame shall have provisions for a 7/16 inch (15.875mm) diameter stainless bolt cast into the frame. The covers shall have a stainless steel threaded stint extended from the eye hook assembly for the purpose of attaching the grounding conductor to the handhole cover.

The minimum wall thickness for heavy duty hand holes shall be 12 inches (300mm).

All conduits shall enter the handhole at a depth of 30 inches (760mm) except for the conduits for detector loops when the handhole is less than 5 feet (1.52 m) from the detector loop. All

conduit ends should be sealed with a waterproof sealant to prevent the entrance of contaminants into the handhole.

Steel cable hooks shall be coated with hot-dipped galvanization in accordance with AASHTO Specification M111. Hooks shall be a minimum of 1/2 inch (12.7 mm) diameter with two 90 degree bends and extend into the handhole at least 6 inches (150 mm). Hooks shall be placed a minimum of 12 inches (300 mm) below the lid or lower if additional space is required.

### **GROUNDING CABLE.**

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 Listed grounding connector (Burdny type KC/K2C, as applicable, or approved equal), to all proposed and existing traffic signal mast arm poles and traffic/pedestrian signal posts, including push button posts. The grounding conductor shall be bonded to all proposed and existing pull boxes, handhole frames and covers and other metallic enclosures throughout the traffic signal wiring system and noted herein and detailed on the plans. 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, GROUNDING, 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.

### **RAILROAD INTERCONNECT CABLE.**

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:

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 873.05 of the Standard Specifications:

Basis of Payment.

This work shall be paid for at the contract unit price per foot (meter) for ELECTRIC CABLE IN CONDUIT, RAILROAD, NO. 14 3C, which price shall be payment in full for furnishing, installing, and making all electrical connections in the traffic signal controller cabinet. Connections in the railroad controller cabinet shall be performed by railroad personnel.

FIBER OPTIC TRACER CABLE.

The cable shall meet the requirements of Section 817 of the "Standard Specifications," except for the following:

Add the following to Article 817.03 of the Standard Specifications:

In order to trace the fiber optic cable after installation, the tracer cable shall be installed in the same conduit as the fiber optic cable in locations shown on the plans. The tracer cable shall be continuous, extended into the controller cabinet and terminated on a barrier type terminal strip mounted on the side wall of the controller cabinet. The barrier type terminal strip and tracer cable shall be clearly marked and identified. 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 INSTALLATION.**

Revise Articles 850.02 and 850.03 of the Standard Specifications to read:

Procedure.

The energy charges for the operation of the traffic signal installation shall be paid for by others. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the Contract or any portion thereof.

The Contractor shall have electricians with IMSA Level II certification on staff to provide signal maintenance.

This item shall include maintenance of all traffic signal equipment at the intersection, including emergency vehicle pre-emption equipment, master controllers, uninterruptible power supply (UPS and batteries), telephone service installations, communication cables, conduits to adjacent intersections, and other traffic signal equipment, but shall not include Automatic Traffic Enforcement equipment, such as Red Light Enforcement cameras, detectors, or peripheral equipment, not owned by the State.

Maintenance.

The maintenance shall be according to MAINTENANCE AND RESPONSIBILITY in Division 800 of these specifications and the following:

The Contractor shall check all controllers every two (2) weeks, which will include visually inspecting all timing intervals, relays, detectors, and pre-emption equipment to ensure that they are functioning properly. This item includes, as routine maintenance, all portions of emergency vehicle pre-emption equipment. The Contractor shall maintain in stock at all times a sufficient amount of materials and equipment to provide effective temporary and permanent repairs.

The Contractor shall provide immediate corrective action when any part or parts of the system fail to function properly. Two far side heads facing each approach shall be considered the minimum acceptable signal operation pending permanent repairs. When repairs at a signalized intersection require that the controller be disconnected 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.

The Contractor shall provide the Engineer with a 24 hour telephone number for the maintenance of the traffic signal installation and for emergency calls by the Engineer.

Traffic signal equipment which is lost or not returned to the Department for any reason shall be replaced with new equipment meeting the requirements of the Standard Specifications and these special provisions.

The Contractor shall respond to all emergency calls from the Department or others within one hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the contract. The Contractor may institute action to recover damages from a responsible third party. If at any time the Contractor fails to perform all work as specified herein to keep the traffic signal installation in proper operating condition or if the Engineer cannot contact the Contractor's designated personnel, the Engineer shall have the

State's Electrical Maintenance Contractor perform the maintenance work required. The State's Electrical Maintenance Contractor shall bill the Contractor for the total cost of the work. The Contractor shall pay this bill within thirty (30) days of the date of receipt of the invoice or the cost of such work will be deducted from the amount due the Contractor. The Contractor shall allow the Electrical Maintenance Contractor to make reviews of the Existing Traffic Signal Installation that has been transferred to the Contractor for Maintenance.

### **TRAFFIC ACTUATED CONTROLLER.**

Add the following to Article 857.02 of the Standard Specifications:

Controllers shall be NTCIP compliant NEMA TS2 Type 1, Econolite ASC/3S-1000 or Eagle/Siemens M50 unless specified otherwise on the plans or elsewhere on these specifications. Only controllers supplied by one of the District One approved closed loop equipment manufacturers will be allowed. The controller shall be the most recent model and software version supplied by the manufacturer at the time of the approval and include the standard 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 skipped during program changes and after all preemption events.

### **MASTER CONTROLLER.**

Revise Articles 860.02 - Materials and 860.03 - Installation of the Standard Specifications to read:

Only controllers supplied by one of the District approved closed loop equipment manufacturers will be allowed. Only NEMA TS 2 Type 1 Eagle/Siemens and Econolite closed loop systems shall be supplied. The latest model and software version of master controller shall be supplied.

Functional requirements in addition to those in Section 863 of the Standard 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 (via phone) the Administrative Support Manager in the District One Business Services Section at (847) 705-4011 to request a phone line installation.

A follow-up fax transmittal to the Administrative Support Manager (847-705-4712) with all required information pertaining to the phone installation is required from the Contractor as soon as possible or within one week after the initial request has been made. A copy of this fax transmittal must also be faxed by the Contractor to the Traffic Signal Systems Engineer at (847) 705-4089. The required information to be supplied on the fax shall include (but not limited to): A street address for the new traffic signal controller (or nearby address); a nearby existing telephone number; what type of telephone service is needed; the name and number of the Contractor's employee for the telephone company to contact regarding site work and questions.

The usual time frame for the activation of the phone line is 4-6 weeks after the Business Services Section has received the Contractor supplied fax. It is, therefore, imperative that the phone line conduit and pull-string be installed by the Contractor in anticipation of this time frame. On jobs which include roadway widening in which the conduit cannot be installed until this widening is completed, the Contractor will be allowed to delay the phone line installation request to the Business Services Section until a point in time that is 4-6 weeks prior to the anticipated completion of the traffic signal work. The contractor shall provide the Administrative Support Manager with an expected installation date considering the 4-6 week processing time.

The telephone line shall be installed and activated one month before the system final inspection.

All costs associated with the telephone line installation and activation (not including the Contract specified conduit installation between the point of telephone service and the traffic signal controller cabinet) shall be paid for by the District One Business Services Section (i.e., this will be an IDOT phone number not a Contractor phone number).

### UNINTERRUPTIBLE POWER SUPPLY.

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 six hours.

Add the following to Article 862.02 of the Standard Specifications:

Materials shall be according to Article 1074.04 as modified in UNINTERRUPTIBLE POWER SUPPLY in Division 1000 of these specifications.

Add the following to Article 862.03 of the Standard Specifications:

The UPS shall additionally include, but not be limited to, a battery cabinet. 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 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.

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 UNINTERRUPTIBLE POWER SUPPLY. Replacement of Emergency Vehicle Priority System confirmation beacons shall be included in the cost of the UNINTERRUPTIBLE POWER SUPPLY item.

**FIBER OPTIC CABLE.**

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 872.02 of the Standard Specifications:

The control cabinet distribution enclosure shall be CSC FTWO12KST-W/O 12 Port Fiber Wall Enclosure or an approved equivalent. The fiber optic cable shall provide six fibers per tube for the amount of fibers called for in the Fiber Optic Cable pay item in the Contract. 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 and sealed. 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.

**MAST ARM ASSEMBLY AND POLE.**

Revise Article 877.01 of the Standard Specifications to read:

Description.

This work shall consist of furnishing and installing a steel mast arm and assembly and a galvanized steel or extruded aluminum shroud for protection of the base plate.

Revise Article 877.03 of the Standard Specifications:

Mast arm assembly and pole shall be as follows.

- (a) Steel Mast Arm Assembly and Pole and Steel Combination Mast Arm Assembly and Pole. The steel mast arm assembly and pole and steel combination mast arm assembly and pole shall consist of a traffic signal mast arm, a luminaire mast arm or davit (for combination pole only), a pole, and a base, together with anchor rods and other appurtenances. The configuration of the mast arm assembly, pole, and base shall be according to the details shown on the plans.

- (1) Loading. The mast arm assembly and pole, and combination mast arm assembly and pole shall be designed for the loading shown on the Highway Standards or elsewhere on the plans, whichever is greater. The design shall be according to AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 1994 Edition for 80 mph (130 km/hr) wind velocity. However, the arm-to-pole connection for tapered signal and luminaire arms shall be according to the "ring plate" detail as shown in Figure 11-1(f) of the 2002 Interim, to the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 2001 4th Edition.
- (4) Structural Steel Grade. The mast arm and pole shall be fabricated according to ASTM A 595, Grade A or B, ASTM A 572 Grade 55, or ASTM A 1011 Grade 55 HSLAS Class 2. The base and flange plates shall be of structural steel according to AASHTO M 270 Grade 50 (M 270M Grade 345). Luminaire arms and trussed arms 15 ft (4.5 m) or less shall be fabricated from one steel pipe or tube size according to ASTM A 53 Grade B or ASTM A 500 Grade B or C. All mast arm assemblies, poles, and bases shall be galvanized according to AASHTO M 111.
- (5) Fabrication. The design and fabrication of the mast arm assembly, pole, and base shall be according to the requirements of the Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals published by AASHTO. The mast arm and pole may be of single length or sectional design. If section design is used, the overlap shall be at least 150 percent of the maximum diameter of the overlapping section and shall be assembled in the factory.

The manufacturer will be allowed to slot the base plate in which other bolt circles may fit, providing that these slots do not offset the integrity of the pole. Circumferential welds of tapered arms and poles to base plates shall be full penetration welds.

- (4) Shop Drawing Approval. The Contractor shall submit detailed drawings showing design materials, thickness of sections, weld sizes, and anchor rods to the Engineer for approval prior to fabrication. These drawings shall be at least 11 x 17 in. (275 x 425 mm) in size and of adequate quality for microfilming.
- (b) Anchor Rods. The anchor rods shall be ASTM F 1554 Grade 105, coated by the hot-dip galvanizing process according to AASHTO M 232, and shall be threaded a minimum of 7 1/2 in. (185 mm) at one end and have a bend at the other end. The first 12 in. (300 mm) at the threaded end shall be galvanized. Two nuts, one lock washer, and one flat washer shall be furnished with each anchor rod. All nuts and washers shall be galvanized.
- (c) The galvanized steel or extruded aluminum shroud shall have dimensions similar to those detailed in the "District One Standard Traffic Signal Design Details." The shroud shall be installed such that it allow air to circulate throughout the mast arm but not allow infestation of insects or other animals, and such that it is not hazardous to probing fingers and feet.

Add the following to Article 877.04 of the Standard Specifications:

The shroud shall not be paid for separately but shall be included in the cost of the mast arm assembly and pole.

### **CONCRETE FOUNDATIONS.**

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) from the threaded end.

Concrete Foundations, Type "A" for Traffic Signal Posts shall provide anchor bolts with the bolt pattern specified within the "District One Standard Traffic Signal Design Details." All Type "A" foundations shall be a minimum depth of 48 inches (1220 mm).

Concrete Foundations, Type "C" for Traffic Signal Cabinets with Uninterruptible Power Supply (UPS) cabinet installations shall be a minimum of 72 inches (1830 mm) long and 31 inches (790 mm) wide. All Type "C" foundations shall be a minimum depth of 48 inches (1220 mm). The concrete apron in front of the Type IV or V cabinet shall be 36 in. x 48 in. x 5 in. (915 mm X 1220 mm X 130 mm). The concrete apron in front of the UPS cabinet shall be 36 in. x 67 in. x 5 in. (915 mm X 1700 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "D" for Traffic Signal Cabinets shall be a minimum of 48 inches (1220 mm) long and 31 inches (790 mm) wide. All Type "D" foundations shall be a minimum depth of 48 inches (1220 mm). The concrete apron shall be 36 in. x 48 in. x 5 in. (910 mm X 1220 mm X 130 mm). Anchor bolts shall provide bolt spacing as required by the manufacturer.

Concrete Foundations, Type "E" for Mast Arm and Combination Mast Arm Poles shall meet the current requirements listed in the Highway Standards.

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.

### **SIGNAL HEAD, LED**

Revise Article 880.02 of the Standard Specifications to read:

#### **Materials.**

Materials shall be according to SIGNAL HEAD, LED in Division 1000 of these specifications.

Add the following to Article 880.04 of the Standard Specifications:

Basis of Payment.

The price for SIGNAL HEAD, LED shall be payment in full for furnishing the equipment described above including signal head with LED modules, all mounting hardware, and installing them in satisfactory operating condition.

**SIGNAL HEAD, LED, RETROFIT**

Description.

This work shall consist of retrofitting an existing polycarbonate traffic signal head with a traffic signal module, pedestrian signal module, and pedestrian countdown signal module, with light emitting diodes (LEDs) as specified in the plans.

Materials.

Materials shall be according to SIGNAL HEAD, LED, and PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED in Divisions 800 and 1000 of these specifications.

Add the following to Article 880.04 of the Standard Specifications:

Basis of Payment.

This item shall be paid for at the contract unit price each for SIGNAL HEAD, LED, RETROFIT, or PEDESTRIAN SIGNAL HEAD, LED, RETROFIT, for the type and number of polycarbonate signal heads, faces, and sections specified, which 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. The type specified will indicate the number of faces and the method of mounting.

**PEDESTRIAN SIGNAL HEAD, LED**

Revise Article 881.01 of the Standard Specifications to read:

Description.

This work shall consist of furnishing and installing a pedestrian signal head with light emitting diodes (LED) or pedestrian countdown signal head, with light emitting diodes (LED) of the type specified in the plans.

All pedestrian signals at an intersection shall be the same type and have the same display. No mixing of different types of pedestrian traffic signals or displays will be permitted.

Revise Article 881.02 of the Standard Specifications to read:

Materials.

Materials shall be according to SIGNAL HEAD, LED, and PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED in Divisions 800 and 1000 of these specifications.

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 the housings glossy black polycarbonate. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on.
- (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).

Revise Article 881.04 of the Standard Specifications to read:

Basis of Payment.

This item shall be paid for at the contract unit price each for PEDESTRIAN SIGNAL HEAD, LED, or PEDESTRIAN COUNTDOWN SIGNAL HEAD, LED, of the type specified and of the particular kind of material when specified, which price shall be payment in full for furnishing the equipment described above including signal head with LED modules, all mounting hardware, and installing them in satisfactory operating condition. The type specified will indicate the number of faces and the method of mounting.

**DETECTOR LOOP.**

Revise Section 886 of the Standard Specifications to read:

Description.

This work shall consist of furnishing and installing a detector loop in the pavement.

Procedure.

A minimum of seven (7) working days prior to the Contractor cutting loops, the Contractor shall have the proposed loop locations marked and contact the Area Traffic Signal Maintenance and Operations Engineer (847) 705-4424 to inspect and approve the layout. When preformed detector loops are installed, the Contractor shall have them inspected and approved prior to the pouring of the Portland cement concrete surface, using the same notification process as above.

Installation.

Loop detectors shall be installed according to the requirements of the "District One Standard Traffic Signal Design Details." Saw-cuts (homeruns on preformed detector loops) from the loop to the edge of pavement shall be made perpendicular to the edge of pavement when possible in

order to minimize the length of the saw-cut (homerun on preformed detector loops) unless directed otherwise by the Engineer or as shown on the plan.

The detector loop cable insulation shall be labeled with the cable specifications.

Each loop detector lead-in wire shall be labeled in the handhole using a Panduit PLFIM water proof tag, or an approved equal, secured to each wire with nylon ties.

Resistance to ground shall be a minimum of 100 mega-ohms under any conditions of weather or moisture. Inductance shall be more than 50 and less than 700 microhenries. Quality readings shall be more than 5.

- (a) Type I. All loops installed in new asphalt pavement shall be installed in the binder course and not in the surface course. The edge of pavement, curb and handhole shall be cut with a 1/4 inch (6.3 mm) deep x 4 inches (100 mm) saw cut to mark location of each loop lead-in.
- (b) Loop sealant shall be a two-component thixotropic chemically cured polyurethane either Chemque Q-Seal 295, Percol Elastic Cement AC Grade or an approved equal. The sealant shall be installed 1/8 inch (3 mm) below the pavement surface, if installed above the surface the overlap shall be removed immediately.
- (c) Detector loop measurements shall include the saw cut and the length of the loop lead-in to the edge of pavement. The lead-in wire, including all necessary connections for proper operations, from the edge of pavement to the handhole, shall be included in the price of the detector loop. Unit duct, trench and backfill, and drilling of pavement or handholes shall be included in detector loop quantities.
- (d) Preformed. This work shall consist of furnishing and installing a rubberized or crosslinked polyethylene heat resistant preformed traffic signal loop in accordance with the Standard Specifications, except for the following:
- (e) 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.
- (f) Handholes shall be placed next to the shoulder or back of curb when preformed detector loops enter the handhole. Non-metallic coilable duct, included in this pay item, shall be used to protect the preformed lead-ins from back of curb to the handhole.
- (g) Preformed detector loops shall be factory assembled with ends capped and sealed against moisture and other contaminants. Homeruns and interconnects shall be pre-wired and shall be an integral part of the loop assembly. The loop configurations and homerun lengths shall be assembled for the specific application. The loop and homerun shall be constructed using 11/16 inch (17.2 mm) outside diameter (minimum), 3/8 inch (9.5 mm) inside diameter (minimum) Class A oil resistant synthetic cord reinforced hydraulic hose with 250 psi (1,720 kPa) internal pressure rating 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 or interconnects to the loops. This will provide maximum wire protection and loop system strength. Hose tee connections shall be heavy duty high temperature synthetic rubber. The tee shall be of proper size to attach directly to the hose, minimizing glue joints. The tee shall have the same flexible properties as the hose to insure that the whole assembly can conform to pavement movement and shifting without cracking or breaking. 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.

This work will be measured for payment in feet (meters) in place. Type I detector loop will be measured along the sawed slot in the pavement containing the loop and lead-in, rather than the actual length of the wire. Preformed detector loops will be measured along the detector loop and lead-in embedded in the pavement, rather than the actual length of the wire.

#### Basis of Payment.

This work shall be paid for at the contract unit price per foot (meter) for DETECTOR LOOP, TYPE I or PREFORMED DETECTOR LOOP as specified in the plans, which price shall be payment in full for furnishing and installing the detector loop and all related connections for proper operation.

### EMERGENCY VEHICLE PRIORITY SYSTEM.

Revise Section 887 of the Standard Specifications to read:

It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle pre-emption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency.

All new installations shall be equipped with Confirmation Beacons as shown on the "District One Standard Traffic Signal Design Details." The Confirmation Beacon shall consist of a 6 watt Par 38 LED flood lamp with a 30 degree light spread, maximum 6 watt energy consumption at 120V, and a 2,000 hour warranty for each direction of pre-emption. The lamp shall have an adjustable mount with a weatherproof enclosure for cable splicing. All hardware shall be cast aluminum or stainless steel. Holes drilled into signal poles, mast arms, or posts shall require rubber grommets. In order to maintain uniformity between communities, the confirmation beacons shall indicate when the control equipment receives the pre-emption signal. The pre-emption movement shall be signalized by a flashing indication at the rate specified by

Section 4D-11 of the "Manual on Uniform Traffic Control Devices," and other applicable sections of future editions. The stopped pre-empted movements shall be signaled by a continuous indication.

All light operated systems shall include security and transit preemption software and operate at a uniform rate of 14.035 Hz  $\pm$ 0.002, or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District.

Basis of Payment.

The work shall be paid for at the contract unit price each for furnishing and installing LIGHT DETECTOR and LIGHT DETECTOR AMPLIFIER. Furnishing and installing the confirmation beacon shall be included in the cost of the Light Detector. The preemption detector amplifier shall be paid for on a basis of (1) one each per intersection controller and shall provide operation for all movements required in the pre-emption phase sequence.

**TEMPORARY TRAFFIC SIGNAL INSTALLATION.**

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, uninterruptible 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 equipment vendor will be allowed to assemble the temporary traffic signal cabinet. Also, an approved equipment vendor shall assemble and test a temporary railroad traffic signal cabinet. (Refer to the "Inspection of Controller and Cabinet" specification). A representative of the approved control equipment vendor shall be present at the temporary traffic signal turn-on inspection.

Construction Requirements.

(a) Controllers.

1. Only controllers supplied by one of the District approved closed loop equipment manufacturers will be approved for use at temporary signal locations. All controllers used for temporary traffic signals shall be fully actuated NEMA microprocessor based with RS232 data entry ports compatible with 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 as modified herein.

2. All control equipment for the temporary traffic signal(s) shall be furnished by the Contractor unless otherwise stated in the plans. On projects with multiple temporary traffic signal installations, all controllers shall be the same manufacturer brand and model number with current software installed.
  - (b) Cabinets. All temporary traffic signal cabinets shall have a closed bottom made of aluminum alloy. The bottom shall be sealed along the entire perimeter of the cabinet base to ensure a water, dust and insect-proof seal. The bottom shall provide a minimum of two (2) 4 inch (100 mm) diameter holes to run the electric cables through. The 4 inch (100 mm) diameter holes shall have a bushing installed to protect the electric cables and shall be sealed after the electric cables are installed.
  - (c) Grounding. Grounding shall be provided for the temporary traffic signal cabinet meeting or exceeding the applicable portions of the National Electrical Code, Section 807 of the Standard Specifications and shall meet the requirements of the District 1 Traffic Signal Specifications for "Grounding of Traffic Signal Systems."
  - (d) Traffic Signal Heads. All traffic signal sections and pedestrian signal sections shall be 12 inches (300 mm). Traffic signal sections shall be LED with expandable view, unless otherwise approved by the Engineer. The temporary traffic signal heads shall be placed as indicated on the temporary traffic signal plan or as directed by the Engineer. The Contractor shall furnish enough extra cable length to relocate heads to any position on the span wire or at locations illustrated on the plans for construction staging. The temporary traffic signal shall remain in operation during all signal head relocations. Each temporary traffic signal head shall have its own cable from the controller cabinet to the signal head.
  - (e) Interconnect.
    1. Temporary traffic signal interconnect shall be provided using fiber optic cable or wireless interconnect technology as specified in the plans. The Contractor may request, in writing, to substitute the fiber optic temporary interconnect indicated in the contract documents with a wireless interconnect. The Contractor must provide assurances that the radio device will operate properly at all times and during all construction staging. If approved for use by the Engineer, the Contractor shall submit marked-up traffic signal plans indicating locations of radios and antennas and installation details. If wireless interconnect is used, and in the opinion of the engineer, it is not viable, or if it fails during testing or operations, the Contractor shall be responsible for installing all necessary poles, fiber optic cable, and other infrastructure for providing temporary fiber optic interconnect at no cost to the contract.

2. The existing system interconnect and phone lines are to be maintained as part of the Temporary Traffic Signal Installation specified for on the plan. The interconnect shall be installed into the temporary controller cabinet as per the notes or details on the plans. All labor and equipment required to install and maintain the existing interconnect as part of the Temporary Traffic Signal Installation shall be included in the item Temporary Traffic Signal Installation. When shown in the plans, temporary traffic signal interconnect equipment shall be furnished and installed. The temporary traffic signal interconnect shall maintain interconnect communications throughout the entire signal system for the duration of the project.
3. Temporary wireless interconnect, compete. The radio interconnect system shall be compatible with Eagle or Econolite controller closed loop systems. This item shall include all materials, labor and testing to provide the completely operational closed loop system as shown on the plans. The radio interconnect system shall include the following components:
  - a. Rack or Shelf Mounted RS-232 Frequency Hopping Spread Spectrum (FHSS) Radio
  - b. Software for Radio Configuration (Configure Frequency and Hopping Patterns)
  - c. Antennas (Omni Directional or Yagi Directional)
  - d. Antenna Cables, LMR400, Low Loss. Max. 100-ft from controller cabinet to antenna
  - e. Brackets, Mounting Hardware, and Accessories Required for Installation
  - f. RS232 Data Cable for Connection from the radio to the local or master controller
  - g. All other components required for a fully functional radio interconnect system

All controller cabinet modifications and other modifications to existing equipment that are required for the installation of the radio interconnect system components shall be included in this item.

The radio interconnect system may operate at 900Mhz (902-928) or 2.4 Ghz depending on the results of a site survey. The telemetry shall have an acceptable rate of transmission errors, time outs, etc. comparable to that of a hardwire system.

The proposed master controller and telemetry module shall be configured for use with the radio interconnect at a minimum rate of 9600 baud.

The radio interconnect system shall include all other components required for a complete and fully functional telemetry system and shall be installed in accordance to the manufacturers recommendations.

The following radio equipment is currently approved for use in Region One/District One: Encom Model 5100 and Intuicom Communicator II.

- (f) Emergency Vehicle Pre-Emption. All emergency vehicle preemption equipment (light detectors, light detector amplifiers, confirmation beacons, etc.) as shown on the temporary traffic signal plans shall be provided by the Contractor. It shall be the Contractor's responsibility to contact the municipality or fire district to verify the brand of emergency vehicle preemption equipment to be installed prior to the contract bidding. The equipment must be completely compatible with all components of the equipment currently in use by the Agency. All light operated systems shall operate at a uniform rate of  $14.035 \text{ hz} \pm 0.002$ , or as otherwise required by the Engineer, and provide compatible operation with other light systems currently being operated in the District. All labor and material required to install and maintain the Emergency Vehicle Preemption installation shall be included in the item Temporary Traffic Signal Installation.
- (g) Vehicle Detection. All temporary traffic signal installations shall have vehicular detection installed as shown on the plans or as directed by the Engineer. Pedestrian push buttons shall be provided for all pedestrian signal heads/phases as shown on the plans or as directed by the Engineer. All approaches shall have vehicular detection provided by vehicle detection system as shown on the plans or 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. A representative of the approved control equipment vendor shall be present and assist the contractor in setting up and maintaining the microwave vehicle sensor or video vehicle detection system. An in-cabinet video monitor shall be provided with all video vehicle detection systems and shall be included in the item Temporary Traffic Signal Installation.
- (h) Uninterruptible Power Supply. When called for in the plans, the UPS cabinet shall be mounted to the temporary traffic signal cabinet and meet the requirements of UNINTERRUPTIBLE POWER SUPPLY in Divisions 800 and 1000 of these specifications.
- (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.
- (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 MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION in Division 800 of these specifications. 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, District One Traffic Signal Specifications 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 noted herein at no cost to the contract.
  2. The controller and LED signal displays shall meet the Standard Specifications and all other requirements in this TEMPORARY TRAFFIC SIGNAL INSTALLATION specification.

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 °F (-34 °C) and 120 °F (48 °C). When not being utilized to inform and direct traffic, portable signals shall be treated as nonoperating equipment according to Article 701.11.
  - g. Basis of Payment. This work will be paid for according to Article 701.20(c).

Basis of Payment.

This work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL INSTALLATION, TEMPORARY BRIDGE TRAFFIC SIGNAL INSTALLATION, or TEMPORARY PORTABLE BRIDGE TRAFFIC SIGNAL INSTALLATION, the price of which shall include all costs for the modifications required for traffic staging, changes in signal phasing as required in the Contract plans, microwave vehicle sensors, video vehicle detection system, any maintenance or adjustment to the microwave vehicle sensors/video vehicle detection system, all material required, the installation and complete removal of the temporary traffic signal. Each intersection will be paid for separately.

**REMOVE EXISTING TRAFFIC SIGNAL EQUIPMENT.**

Add the following to Article 895.05 of the Standard Specifications:

The traffic signal equipment which is to be removed and is to become the property of the Contractor shall be disposed of outside the right-of-way at the Contractor's expense.

All equipment to be returned to the State shall be delivered by the Contractor to the State's Traffic Signal Maintenance Contractor's main facility. The Contractor shall contact the State's Electrical Maintenance Contractor to schedule an appointment to deliver the equipment. No equipment will be accepted without a prior appointment. All equipment shall be delivered within 30 days of removing it from the traffic signal installation. The Contractor shall provide 5 copies of a list of equipment that is to remain the property of the State, including model and serial numbers, where applicable. 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 with these requirements, it will be rejected by the State's Electrical Maintenance Contractor. The Contractor shall be responsible for the condition of the traffic signal equipment from the time 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.

**TRAFFIC SIGNAL PAINTING.**

Description.

This work shall include surface preparation, powder type painted finish application and packaging of new galvanized steel traffic signal mast arm poles and posts assemblies. All work associated with applying the painted finish shall be performed at the manufacturing facility for the pole assembly or post or at a painting facility approved by the Engineer. Traffic signal mast arm shrouds and post bases shall also be painted the same color as the pole assemblies and posts.

Surface Preparation.

All weld flux and other 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 °F for a minimum one (1) hour. The coating shall be electrostatically applied and cured by elevating the zinc-coated substrate temperature to a minimum of 400 °F.

The finish paint color shall be one of the manufacturer's standard colors and shall be as selected by the local agency responsible for paint costs. The Contractor shall confirm, in writing, the color selection with the local responsible agency and provide a copy of the approval to the Engineer and a copy of the approval shall be included in the material catalog submittal.

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 manufacturer's facility shall be repaired to the satisfaction of the Engineer using a method recommended by the manufacturer and approved by the Engineer. If while at the manufacturer'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 manufacturer's standard warranty and certification that the paint system has been properly applied.

Packaging.

Prior to shipping, the poles and posts shall be wrapped in ultraviolet-inhibiting plastic foam or rubberized foam.

Basis of Payment.

This work shall be paid for at the contract unit price each for PAINT NEW MAST ARM 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.

## ILLUMINATED STREET NAME SIGN

### Description.

This work shall consist of furnishing and installing a LED internally illuminated street name sign.

### Materials.

Materials shall be in accordance with ILLUMINATED STREET NAME SIGN in Division 1000 of these specifications.

### 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 Pelco model SE-5015, or approved equal, 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 uninterruptible 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 ILLUMINATED STREET NAME SIGN, of the length specified which shall be payment in full for furnishing and installing the LED internally illuminated street 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.

## RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM.

### Description.

This work shall consist of re-optimizing a closed loop traffic signal system according to the following Levels of work.

LEVEL I applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system. The purpose of this work is to integrate the improvements to the subject intersection into the signal system while minimizing the impacts to the existing system operation. This type of work would be commonly associated with the addition of signal phases, pedestrian phases, or improvements that do not affect the capacity at an intersection.

LEVEL II applies when improvements are made to an existing signalized intersection within an existing closed loop traffic signal system and detailed analysis of the intersection operation is desired by the engineer, or when a new signalized or existing signalized intersection is being added to an existing system, but optimization of the entire system is not required. The purpose of this work is to optimize the subject intersection, while integrating it into the existing signal system with limited impact to the system operations. This item also includes an evaluation of the overall system operation, including the traffic responsive program.

For the purposes of re-optimization work, an intersection shall include all traffic movements operated by the subject controller and cabinet.

After the signal improvements are completed, the signal shall be re-optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the Department, if available and as appropriate. The existing SCAT Report is available for review at the District One office and if the Consultant provides blank computer disks, copies of computer simulation files for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

(a) LEVEL I Re-Optimization

1. The following tasks are associated with LEVEL I Re-Optimization.
  - a. Appropriate signal timings shall be developed for the subject intersection and existing timings shall be utilized for the rest of the intersections in the system.
  - b. Proposed signal timing plan for the new or modified intersection(s) shall be forwarded to IDOT for review prior to implementation.
  - c. Consultant shall conduct on-site implementation of the timings at the turn-on and make fine-tuning adjustments to the timings of the subject intersection in the field to alleviate observed adverse operating conditions and to enhance operations.
2. The following deliverables shall be provided for LEVEL I Re-Optimization.
  - a. Consultant shall furnish to IDOT a cover letter describing the extent of the re-optimization work performed.
  - b. Consultant shall furnish an updated intersection graphic display for the subject intersection to IDOT and to IDOT's Traffic Signal Maintenance Contractor.

(b) LEVEL II Re-Optimization

1. In addition to the requirements described in the LEVEL I Re-Optimization above, the following tasks are associated with LEVEL II Re-Optimization.
  - a. Traffic counts shall be taken at the subject intersection after the traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit, multi-unit heavy vehicles, and transit buses.
  - b. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
  - c. Traffic responsive program operation shall be evaluated to verify proper pattern selection and lack of oscillation and a report of the operation shall be provided to IDOT.
2. The following deliverables shall be provided for LEVEL II Re-Optimization.
  - a. Consultant shall furnish to IDOT one (1) copy of a technical memorandum for the optimized system. The technical memorandum shall include the following elements:
    - (1) Brief description of the project
    - (2) Printed copies of the analysis output from Synchro (or other appropriate, approved optimization software file)
    - (3) Printed copies of the traffic counts conducted at the subject intersection
  - b. Consultant shall furnish to IDOT two (2) CDs for the optimized system. The CDs shall include the following elements:
    - (1) Electronic copy of the technical memorandum in PDF format
    - (2) Revised Synchro files (or other appropriate, approved optimization software file) including the new signal and the rest of the signals in the closed loop system
    - (3) Traffic counts conducted at the subject intersection
    - (4) New or updated intersection graphic display file for the subject intersection
    - (5) The CD shall be labeled with the IDOT system number and master location, as well as the submittal date and the consultant logo. The CD case shall include a clearly readable label displaying the same information securely affixed to the side and front.

#### Basis of Payment.

This work shall be paid for at the contract unit price each for RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL I or RE-OPTIMIZE TRAFFIC SIGNAL SYSTEM – LEVEL II, which price shall be payment in full for performing all work described herein per intersection. Following completion of the timings and submittal of specified deliverables, 100 percent of the bid price will be paid. Each intersection will be paid for separately.

#### OPTIMIZE TRAFFIC SIGNAL SYSTEM.

##### Description.

This work shall consist of optimizing a closed loop traffic signal system.

OPTIMIZE TRAFFIC SIGNAL SYSTEM applies when a new or existing closed loop traffic signal system is to be optimized and a formal Signal Coordination and Timing (SCAT) Report is to be prepared. The purpose of this work is to improve system performance by optimizing traffic signal timings, developing a time of day program and a traffic responsive program.

After the signal improvements are completed, the signal system shall be optimized as specified by an approved Consultant who has previous experience in optimizing Closed Loop Traffic Signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants. Traffic signal system optimization work, including fine-tuning adjustments of the optimized system, shall follow the requirements stated in the most recent IDOT District 1 SCAT Guidelines, except as note herein.

A listing of existing signal equipment, interconnect information, phasing data, and timing patterns may be obtained from the Department, if available and as appropriate. The existing SCAT Report is available for review at the District One office and if the Consultant provides blank computer disks, copies of computer simulation files for the existing optimized system and a timing database that includes intersection displays will be made for the Consultant. The Consultant shall confer with the Traffic Signal Engineer prior to optimizing the system to determine if any extraordinary conditions exist that would affect traffic flows in the vicinity of the system, in which case, the Consultant may be instructed to wait until the conditions return to normal or to follow specific instructions regarding the optimization.

- (a) The following tasks are associated with OPTIMIZE TRAFFIC SIGNAL SYSTEM.
1. Appropriate signal timings and offsets shall be developed for each intersection and appropriate cycle lengths shall be developed for the closed loop signal system.
  2. Traffic counts shall be taken at all intersections after the permanent traffic signals are approved for operation by the Area Traffic Signal Operations Engineer. Manual turning movement counts shall be conducted from 6:30 a.m. to 9:30 a.m., 11:00 a.m. to 1:00 p.m., and 3:30 p.m. to 6:30 p.m. on a typical weekday from midday Monday to midday Friday. The turning movement counts shall identify cars, and single-unit and multi-unit heavy vehicles.
  3. As necessary, the intersections shall be re-addressed and all system detectors reassigned in the master controller according to the current standard of District One.
  4. A traffic responsive program shall be developed, which considers both volume and occupancy. A time-of-day program shall be developed for used as a back-up system.
  5. Proposed signal timing plan for the new or modified intersection shall be forwarded to IDOT for review prior to implementation.
  6. Consultant shall conduct on-site implementation of the timings and make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.

7. Speed and delay studies shall be conducted during each of the count periods along the system corridor in the field before and after implementation of the proposed timing plans for comparative evaluations. These studies should utilize specialized electronic timing and measuring devices.
- (b) The following deliverables shall be provided for OPTIMIZE TRAFFIC SIGNAL SYSTEM.
1. Consultant shall furnish to IDOT one (1) copy of a SCAT Report for the optimized system. The SCAT Report shall include the following elements:

<b>Cover Page in color showing a System Map</b>
<b>Figures</b> <ol style="list-style-type: none"> <li>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.</li> <li>2. General location map in color – showing signal system location in the metropolitan area.</li> <li>3. Detail system location map in color – showing cross street names and local controller addresses.</li> <li>4. Controller sequence – showing controller phase sequence diagrams.</li> </ol>
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Basis of Payment.

The work shall be paid for at the contract unit each for OPTIMIZE TRAFFIC SIGNAL SYSTEM, which price shall be payment in full for performing all work described herein for the entire traffic signal system. Following the completion of traffic counts, 25 percent of the bid

price will be paid. Following the completion of the Synchro analysis, 25 percent of the bid price will be paid. Following the setup and fine tuning of the timings, the speed-delay study, and the TRP programming, 25 percent of the bid price will be paid. The remaining 25 percent will be paid when the system is working to the satisfaction of the engineer and the report and CD have been submitted.

### TEMPORARY TRAFFIC SIGNAL TIMINGS

#### Description.

This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the duration of the temporary signalized condition, 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 TIMINGS.

- (a) Consultant shall attend temporary traffic signal inspection (turn-on) and/or detour meeting and conduct on-site implementation of the traffic signal timings. Make fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.
- (b) Consultant shall provide monthly observation of traffic signal operations in the field.
- (c) Consultant shall provide on-site consultation and adjust timings as necessary for construction stage changes, temporary traffic signal phase changes, and any other conditions affecting timing and phasing, including lane closures, detours, and other construction activities.
- (d) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

#### Basis of Payment.

The work shall be paid for at the contract unit price each for TEMPORARY TRAFFIC SIGNAL TIMINGS, which price shall be payment in full for performing all work described herein per intersection. When the temporary traffic signal installation is turned on 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.

## DIVISION 1000 MATERIALS

### PEDESTRIAN PUSH-BUTTON.

Revise Article 1074.02 of the Standard Specifications to read:

- (a) General. Push-button assemblies shall be ADA compliant, highly vandal resistant, be pressure activated with minimal movement and cannot be stuck in a closed or constant call position. A red latching LED and audible tone shall be provided for confirmation of an actuation call.
- (b) Latching LED. The normal state of the LED shall be off. When the push button is pressure activated, the LED shall be lighted and remain on until the beginning of the walk phase. The latching relay shall be mounted in the signal cabinet, controlling two pedestrian phases.
- (b) Housing. The push-button housing shall be solid 6061 aluminum and powder coated yellow, unless otherwise noted on the plans.
- (c) Actuator. The actuator shall be stainless steel with a solid state electronic Piezo switch rated for a minimum of 20 million cycles with no moving plunger or moving electrical contacts. The operating voltage shall be 12-24 V AC/DC.
- (d) Pedestrian Station. Stations shall be designed to be mounted directly to a post, mast arm pole or wood pole. The station shall be aluminum and will accept a 3-inch round push button assembly and a 9 X 12-inch R10-3e sign with arrow(s) for a count-down pedestrian signal. The pedestrian station size without count-down pedestrian signals shall accommodate a 5 X 7  $\frac{3}{4}$  -inch R10-3b or R10-3d sign with arrow(s).
- (e) Location. Pedestrian push buttons and stations shall be mounted on poles and/or posts as shown on the plans and shall be fully accessible from a paved or concrete surface. See the District's Detail sheets for orientation and mounting details.

### CONTROLLER CABINET AND PERIPHERAL EQUIPMENT.

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) (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 – Plug-in type EDCO SHA-1250 or Atlantic/Pacific approved equal.
- (b) (8) BIU – Containment screw required.
- (b) (9) Transfer Relays – Solid state or mechanical flash relays are acceptable.

- (b) (10) Switch Guards – All switches shall be guarded.
- (b) (11) Heating – Two (2) porcelain light receptacles with cage protection controlled by both a wall switch and a thermostat or a thermostatically controlled 150 watt strip heater.
- (b) (12) Plan & Wiring Diagrams – 12” x 16” (3.05mm x 4.06mm) moisture sealed container attached to door.
- (b) (13) Detector Racks – Fully wired and labeled for four (4) channels of emergency vehicle pre-emption and sixteen channels (16) of vehicular operation.
- (b) (14) Field Wiring Labels – All field wiring shall be labeled.
- (b) (15) Field Wiring Termination – Approved channel lugs required.
- (b) (16) Power Panel – Provide a nonconductive shield.
- (b) (17) Circuit Breaker – The circuit breaker shall be sized for the proposed load but shall not be rated less than 30 amps.
- (b) (18) Police Door – Provide wiring and termination for plug in manual phase advance switch.
- (b) (19) Railroad Pre-Emption Test Switch – Eaton 8830K13 SHA 1250 or equivalent.

**RAILROAD, FULL-ACTUATED CONTROLLER AND CABINET.**

Controller shall comply with Article 1073.01 as amended in these Traffic Signal Special Provisions.

Controller Cabinet and Peripheral Equipment shall comply with Article 1074.03 as amended in these Traffic Signal Special Provisions.

Add the following to Articles 1073.01 (c) (2) and 1074.03 (a) (5) (e) of the Standard Specifications:

Controllers and cabinets shall be new and NEMA TS2 Type 1 design.

A method of monitoring and/or providing redundancy to the railroad preemptor input to the controller shall be included as a component of the Railroad, Full Actuated Controller and Cabinet installation and be verified by the traffic signal equipment supplier prior to installation.

Railroad interconnected controllers and cabinets shall be assembled only by an approved traffic signal equipment supplier. 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.

**UNINTERRUPTIBLE POWER SUPPLY.**

Revise Article 1074.04(a)(1) of the Standard Specifications to read:

The UPS shall be line interactive and provide voltage regulation and power conditioning when utilizing utility power. The UPS shall be sized appropriately for the intersection's normal traffic signal operating connected load, plus 20 percent (20%). The total connected traffic signal load shall not exceed the published ratings for the UPS. The UPS shall provide a minimum of six (6) hours of normal operation run-time for signalized intersections with LED type signal head optics at 77 °F (25 °C) (minimum 700 W/VA active output capacity, with 90 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, 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).

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 incorporate a flanged electric generator inlet for charging the batteries and operating the UPS. The generator connector shall be male type, twist-lock, rated as 15A, 125VAC with a NEMA L5-15P configuration and weatherproof lift cover plate (Hubbell model HBL4716C or approved equal). Access to the generator inlet shall be from a secured weatherproof lift cover plate or behind a locked battery cabinet police panel.

Battery System.

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 six hours. Calculations shall be provided showing the number of batteries of the type supplied that are needed to satisfy this requirement. A minimum of four batteries shall be provided.

Add the following to the Article 1074.04 of the Standard Specifications:

- (e) Warranty. The warranty for an uninterruptible power supply (UPS) shall cover a minimum of two years from date the equipment is placed in operation; however, the batteries of the UPS shall be warranted for full replacement for a minimum of five years from the date the traffic signal and UPS are placed into service.

**ELECTRIC CABLE.**

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.

**TRAFFIC SIGNAL POST.**

Add the following to Article 1077.01 (b) of the Standard Specifications:

All posts and bases shall be steel and hot dipped galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with TRAFFIC SIGNAL PAINTING in Division 800 of these specifications.

**MAST ARM ASSEMBLY AND POLE.**

Add the following to Article 1077.03 (a) of the Standard Specifications:

Traffic signal mast arms shall be one piece construction, unless otherwise approved by the Engineer. All poles shall be galvanized. If the Department approves painting, powder coating by the manufacturer will be required over the galvanization in accordance with TRAFFIC SIGNAL PAINTING in Division 800 of these specifications.

The shroud shall be of sufficient strength to deter pedestrian and vehicular damage. The shroud shall be constructed and designed to allow air to circulate throughout the mast arm but not allow infestation of insects or other animals, and such that it is not hazardous to probing fingers and feet. All mounting hardware shall be stainless steel.

**SIGNAL HEADS.**

Add the following to Section 1078 of the Standard Specifications:

All signal and pedestrian heads shall provide 12" (300 mm) displays with glossy yellow or black polycarbonate housings. All head housings shall be the same color (yellow or black) at the intersection. For new signalized intersections and existing signalized intersections where all signal and/or pedestrian heads are being replaced, the proposed head housings shall be black. Where only selected heads are being replaced, the proposed head housing color (yellow or black) shall match existing head housings. Connecting hardware and mounting brackets shall be polycarbonate (black). A corrosion resistant anti-seize lubricant shall be applied to all metallic mounting bracket joints, and shall be visible to the inspector at the signal turn-on. Post

top mounting collars are required on all posts, and shall be constructed of the same material as the brackets.

Pedestrian signal heads shall be furnished with the international symbolic "Walking Person" and "Upraised Palm" displays. Egg crate sun shields are not permitted.

Signal heads shall be positioned according to the "District One Standard Traffic Signal Design Details."

### SIGNAL HEAD, LIGHT EMITTING DIODE.

Add the following to Article 1078 of the Standard Specifications

#### General.

LED signal heads (All Face and Section Quantities), (All Mounting Types) shall conform fully to the requirements of Articles 1078.01 and 1078.02 of the Standard Specifications amended herein.

1. The LED signal modules shall be replaced or repaired if an LED signal module fails to function as intended due to workmanship or material defects within the first 60 months from the date of delivery. LED signal modules which exhibit luminous intensities less than the minimum values specified in Table 1 of the ITE Vehicle Traffic Control Signal Heads: Light Emitting Diode (LED) Circular Signal Supplement (June 27, 2005) [VTSCH], or applicable successor ITE specifications, or show signs of entrance of moisture or contaminants within the first 60 months of the date of delivery shall be replaced or repaired. The manufacturer's written warranty for the LED signal modules shall be dated, signed by an Officer of the company and included in the product submittal to the State.
2. Each module shall consist of an assembly that utilizes LEDs as the light source in lieu of an incandescent lamp for use in traffic signal sections.

#### (a) Physical and Mechanical Requirements

1. Modules can be manufactured under this specification for the following faces:
  - a. 12 inch (300 mm) circular, multi-section
  - b. 12 inch (300 mm) arrow, multi-section
  - c. 12 inch (300 mm) pedestrian, 2 sections
2. The maximum weight of a module shall be 4 lbs. (1.8 kg).
3. Each module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.

4. Material used for the lens and signal module construction shall conform to ASTM specifications for the materials.
5. The lens of the module shall be tinted with a wavelength-matched color to reduce sun phantom effect and enhance on/off contrast. The tinting shall be uniform across the lens face. Polymeric lens shall provide a surface coating or chemical surface treatment applied to provide abrasion resistance. The lens of the module shall be integral to the unit, convex with a smooth outer surface and made of plastic. The lens shall have a textured surface to reduce glare.
6. The use of tinting or other materials to enhance ON/OFF contrasts shall not affect chromaticity and shall be uniform across the face of the lens.
7. Each module shall have a symbol of the type of module (i.e. circle, arrow, etc.) in the color of the module. The symbol shall be 1 inch (25.4 mm) in diameter. Additionally, the color shall be written out in 1/2 inch (12.7mm) letters next to the symbol.

(b) Photometric Requirements

1. The minimum initial luminous intensity values for the modules shall conform to the values in Table 1 of the VTCSH (2005) for circular signal indications, and as stated in Table 3 of these specifications for arrow and pedestrian indications at 25 °C.
2. The modules shall meet or exceed the illumination values stated in Article 1078.01(3)c of the Standard Specifications for circular signal indications, and Table 3 of these specifications for arrow and pedestrian indications, throughout the useful life based on normal use in a traffic signal operation over the operating temperature range.
3. The measured chromaticity coordinates of the modules shall conform to the chromaticity requirements of Section 4.2 of the VTCSH (2005) or applicable successor ITE specifications.
4. The LEDs utilized in the modules shall be AlInGaP technology for red, yellow, Portland orange (pedestrian) and white (pedestrian) indications, and GaN for green indications, and shall be the ultra bright type rated for 100,000 hours of continuous operation from -40 °C to +74 °C.

(c) Electrical

1. Maximum power consumption for LED modules is per Table 2.
2. 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. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

(d) Retrofit Traffic Signal Module

1. The following specification requirements apply to the Retrofit module only. All general specifications apply unless specifically superseded in this section.
2. Retrofit modules can be manufactured under this specification for the following faces:
  - a. 12 inch (300 mm) circular, multi-section
  - b. 12 inch (300 mm) arrow, multi-section
  - c. 12 inch (300 mm) pedestrian, 2 sections
3. Each Retrofit module shall be designed to be installed in the doorframe of a standard traffic signal housing. The Retrofit module shall be sealed in the doorframe with a one-piece EPDM (ethylene propylene rubber) gasket.
4. The maximum weight of a Retrofit module shall be 4 lbs. (1.8 kg).
5. Each Retrofit module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, a lens and gasket, etc.), and shall be weather proof after installation and connection.
6. Electrical conductors for modules, including Retrofit modules, shall be 39.4 inches (1m) in length, with quick disconnect terminals attached.
7. The lens of the Retrofit module shall be integral to the unit, shall be convex with a smooth outer surface and made of plastic or of glass.

(e) The following specification requirements apply to the 12 inch (300 mm) arrow module only. All general specifications apply unless specifically superseded in this section.

1. The arrow module shall meet specifications stated in Section 9.01 of the Equipment and Material Standards of the Institute of Transportation Engineers (November 1998) [ITE Standards], Chapter 2 (Vehicle Traffic Control Signal Heads) 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.
- (g) The following specification requirements apply to the 12 inch (300 mm) Pedestrian module only. All general specifications apply unless specifically superseded in this section.
1. Each pedestrian signal LED module shall provide the ability to actuate the solid upraised hand and the solid walking person on one 12 inch (300mm) section.
  2. Two (2) pedestrian sections shall be installed. The top section shall be wired to illuminate only the upraised hand and the bottom section shall be the walking man.
  3. "Egg Crate" type sun shields are not permitted. All figures must be a minimum of 9 inches (225mm) in height and easily identified from a distance of 120-feet (36.6m).

**PEDESTRIAN COUNTDOWN SIGNAL HEAD, LIGHT EMITTING DIODE.**

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. The module shall allow for consecutive cycles without displaying the steady Upraised Hand.
5. The module shall recognize preemption events and temporarily modify the crossing cycle accordingly.
6. If the controller preempts during the Walking Person (symbolizing Walk), the countdown will follow the controller's directions and will adjust from Walking Person to flashing Upraised Hand. It will start to count down during the flashing Upraised Hand.

7. If the controller preempts during the flashing Upraised Hand, the countdown will continue to count down without interruption.
8. The next cycle, following the preemption event, shall use the correct, initially programmed values.
9. If the controller output displays Upraised Hand steady condition and the unit has not arrived to zero or if both the Upraised Hand and Walking Person are dark for some reason, the unit suspends any timing and the digits will go dark.
10. The digits will go dark for one pedestrian cycle after loss of power of more than 1.5 seconds.
11. The countdown numerals shall be two (2) "7 segment" digits forming the time display utilizing two rows of LEDs.
12. The LED module shall meet the requirements of the Institute of Transportation Engineers (ITE) LED purchase specification, "Pedestrian Traffic Control Signal Indications - Part 2: LED Pedestrian Traffic Signal Modules," or applicable successor ITE specifications, except as modified herein.
13. The LED modules shall provide constant light output under power. Modules with dimming capabilities shall have the option disabled or set on a non-dimming operation.
14. In the event of a power outage, light output from the LED modules shall cease instantaneously.
15. The LEDs utilized in the modules shall be AlInGaP technology for Portland Orange (Countdown Numerals and Upraised Hand) and GaN technology for Lunar White (Walking Person) indications.
16. The individual LEDs shall be wired such that a catastrophic loss or the failure of one or more LED will not result in the loss of the entire module.

#### Electrical.

1. Maximum power consumption for LED modules is 29 watts.
2. The measured chromaticity shall remain unchanged over the input line voltage range listed of 80 VAC to 135 VAC.

#### SIGNAL HEAD, BACKPLATE.

Delete 1<sup>st</sup> sentence of Article 1078.03 of the Standard Specifications and add "All backplates shall be aluminum and louvered".

**INDUCTIVE LOOP DETECTOR.**

Add the following to Article 1079.01 of the Standard Specifications:

Contracts requiring new cabinets shall provide for rack mounted detector amplifier cards. Detector amplifiers shall provide LCD displays with loop frequency, inductance, and change of inductance readings.

**ILLUMINATED SIGN, LIGHT EMITTING DIODE.**

Delete 2<sup>nd</sup> paragraph of Article 1084.01(a) and add "Mounting hardware shall be black polycarbonate or galvanized steel and similar to mounting Signal Head hardware and brackets specified herein and shall provide tool free access to the interior.

Add the following to Article 1084.01 (b) of the Standard Specifications:

The message shall be formed by rows of LEDs. The sign face shall be 24 inches (600 mm) by 24 inches (600 mm).

Add the following to Article 1084.01 of the Standard Specifications:

- (e) The light emitting diode (LED) blank out signs shall be manufactured by National Sign & Signal Company, or an approved equal and consist of a weatherproof housing and door, LEDs and transformers.

**ILLUMINATED STREET NAME SIGN**

The illuminate street name sign shall be as follows.

(a) Description.

The LEDs shall be white in color and utilize InGaN or UV thermally efficient technology. The LED Light Engines shall be designed to fit inside a standard fluorescent illuminated street sign housing in lieu of fluorescent lamps and ballasts or a slim line type housing. 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. The sign assembly shall consist of a four-, six-, or eight-foot aluminum housing. White translucent 3M DG<sup>3</sup> reflective sheeting sign faces with the street name applied in 3M/Scotchlite Series 1177 or current 3M equivalent transparent green shall be installed in hinged doors on the side of the sign 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 Light Engine shall be a single, self-contained device, for installation in an existing street sign housing. The power supply must be designed to fit and mounted on the inside wall at one end of the street sign housing. The LED Light Engine shall be mounted within the inner top portion of the 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 top with a minimum thickness of .140" x 10 3/4" deep (including the drip edge). The extruded aluminum bottom is .094" thick x 5 7/8" deep. The ends of the housing shall be cast aluminum with a minimum thickness of .250". A six-foot sign shall be 72 5/8" long and 22 5/16" tall and not weigh more than 77 pounds. An eight-foot sign shall be 96 5/8" long and 22 5/16" tall and not weigh more than 92 pounds. All corners are continuous TIG (Tungsten Inert Gas) welded to provide a weatherproof seal around the entire housing.
2. The door shall be constructed of extruded aluminum. 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, .040" x 1 1/8" open stainless steel hinge. The door shall be held secure onto a 1" wide by 5/32" thick neoprene gasket by three (six total for two-way sign) 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. The letters shall be 8" upper case and 6" lower case. The sign face legend background shall consist of 3M/Scotchlite Series 4090T or current equivalent 3M translucent DG<sup>3</sup> white VIP (Visual Impact Performance) diamond grade sheeting (ATSM Type 9) and 3M/Scotchlite Series 1177 or current 3M equivalent transparent green acrylic EC (electronic cut-able) film applied to the front of the sign face. The legend shall be framed by a white polycarbonate 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 etched and primed in accordance to industry standards before receiving appropriate color coats of industrial enamel.
5. All fasteners and hardware shall be corrosion resistant stainless steel. No tools are required for routine maintenance.
6. All wiring shall be secured by insulated wire compression nuts.
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°C (+77°F), shall not exceed 20%.
4. The LED Light Engine shall be cycled ON and OFF with a photocell as shown on the detail sheet and shall not exceed the following maximum power values:

4-Foot Sign	60 W
6-Foot Sign	90 W
8-Foot Sign	120 W

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<sup>2</sup>.
2. The manufacturer shall make available independent laboratory test results to verify compliance to Voltage Range and Luminous Intensity Distribution Sections.
3. Twelve (12) 1.25 watt LED units shall be mounted on 1-inch x 22-inch metal core printed circuit boards (MCPCB). The viewing angle shall be 120 degrees. 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.

Cook County Traffic Signal Special Provisions

## Special Provision

### Traffic Signal Work General

All work and equipment performed and installed under this contract, shall be governed and shall comply to the State of Illinois "Standard Specifications for Road and Bridge Construction" latest edition, herein referred to as the Standard Specifications; the State of Illinois "Manual on Uniform Traffic Control Devices for Streets and Highways", latest edition; the "National Electrical Code" latest edition herein referred to as the NEC; the National Electrical Manufacturers Association, herein referred to as NEMA (all publications for traffic control items) latest editions; the International Municipal Signal Association, herein referred to as IMSA "Official Wire & Cable Specifications Manual" latest edition; the Institute of Transportation Engineers, herein referred to as the ITE, Technical Report No.1, "A Standard for Adjustable Face Vehicular Traffic Control Heads"; AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals" and the "Supplemental Specifications" and "Recurring Special Provisions" noted herein.

The following Special Provisions supplement the above specifications, manuals, and code. The intent of these Special Provisions is to prescribe the materials and construction methods commonly used for traffic signal installations. All material furnished shall be new. The locations and the details of all installations shall be as indicated on the Plans or as directed by the Engineer. The work to be done under this contract consists of furnishing and installing all traffic signal work as specified in the Plans and as specified herein in a manner acceptable and approved by the Engineer. In case of conflict with any part or parts of said documents, these Special Provisions shall take precedence and shall govern.

In order to reduce possible vehicular conflicts with fixed objects and avoid public criticism, it is necessary to require that no posts, poles, heads, or controller cabinets be installed until all traffic signal control equipment is brought to and located on the job site.

The construction, installation and/or removal work shall be accomplished at the following intersection(s):

Lake-Cook Road & US 41 Northbound Ramp

### Description of Work

The work to be done 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.

### Restoration

All areas and plant material damaged by the installation of Traffic Signal posts, mast arm poles, underground cables or conduits, handholes and control cabinets shall be replaced as follows:

- **Grass Areas:** Replace top soil to a depth of four (4) inches (100 mm), re-grade shoulders, ditch slopes, and open areas back to former existing grades, fertilize, seed and mulch all damaged areas.
- **Sod Areas (areas adjacent to residential, commercial and industrial properties and any other areas as directed by the engineer):** Fertilize and re-sod damaged areas.
- **Plant Materials:** Remove and replace damaged trees, shrubs and vines with the same varieties that existed prior to damage.
- **Shoulders other than Stabilized and Backslopes, medians, sidewalks, pavement, etc.:** Replace shoulder to original condition and restore edge of backslope to original lines and grades. Medians, sidewalks and pavement shall be replaced in kind.

All damaged landscape shall be replaced in accordance with Section 250 through 254 of the Standard Specifications.

Any damage, due to the installation of traffic signal equipment; or necessary removal at handholes, jacking pits, and inspection openings, of sidewalks, curbs, gutters, median and island paving, and/or pavement, shall be repaired or replaced by the Contractor. Repair or replacement shall be made with a like material of like thickness to the existing surface. Restoration of traffic signal work area shall be included in related pay items foundation, conduit, handhole, trench and backfill, etc.

### **Control of Traffic Signal Materials**

All work shall meet the requirements of the "Standard Specifications for Road and Bridge Construction", except as follows:

The controller and all control equipment shall be of a manufacturer that is approved by this Department. The manufacturer shall have a representative located in the six (6) county Chicago areas.

The intent of this Section is to prescribe the materials and construction methods commonly used for traffic signal installations. All material furnished shall be new. Traffic materials and equipment shall bear the U.L. label whenever such labeling is available.

Before any signal equipment, including mast arm assemblies, poles, controller cabinets, all control equipment and signal heads, are delivered to the job site, the Contractor shall obtain and forward to the Engineer a certified, notarized statement from the manufacturer, containing the catalog numbers of the equipment and/or material, guaranteeing that the equipment and/or material, after manufacture, comply in all respects with the requirements of the Specifications and these Special Provisions.

All material approval requests shall be within thirty (30) consecutive calendar days after the Contract is awarded, or at the pre-construction meeting, whichever is first.

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 that have been installed on the job will be done at the Contractor's own risk and may be subject to removal and disposal at the Contractor's expense.

The Contractor must submit the following for approval by the Engineer:

- Three (3) complete set of manufacturer's descriptive literature, drawings, and specifications of the traffic signal equipment, handholes, junction box, cable, conduit and all associated items that will be installed on the contract. Partial or incomplete submittal will be returned without review.
- The contractor shall supply samples of all wire and cable, and shall make up and supply samples of each type of cable splice proposed for use in the work for the-Engineer's approval.
- Seven(7) complete shop drawings of the mast arm assemblies and poles, showing in detail the fabrication, anchor bolts, and reinforcing materials. Certain non-standard mast arm poles and assemblies will require additional review. The Contractor shall account for additional review time in their schedule.
- Seven(7) copies of a letter from the Traffic Signal Contractor on company letterhead listing contract number or permit number, project location limits, pay item number and description and listing the manufacturer's name and model numbers of the proposed equipment to be supplied and stating that the proposed equipment meets all Contract requirements. The letter will be reviewed by the 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.
- Five (5) copies of a letter from the Traffic Signal Contractor listing the System Coordination and Timing (SCAT) consultant's name shall be supplied. The letter will be reviewed by the Engineer to determine whether the SACT consultant to be used is approved. The letters will be stamped as approved or not approved accordingly and returned to the Contractor.
- Where certifications are specified and/or warranties. Certifications involving inspections and/or tests of material shall be complete with all test data, dates and times.
- All above shall be stamped with the Section Number, Permit Number, or Contract Number and Intersection(s) name(s). Pay item numbers shall also be included. If the above required information is not on each sheet of the above literature or letters, the equipment and material cuts will not be reviewed and shall be returned to the Contractor.
- Exceptions, Deviations and Substitutions. In general, exceptions to and deviations from the requirements of the Contract Documents will not be allowed. It is the Contractor's responsibility to note any deviations from Contract requirements at the time of submittal and to make any requests for deviations in writing to the Engineer. In general, substitutions will not be acceptable. Requests for substitutions must demonstrate that the proposed substitution is superior to the material or equipment required by the Contract Documents. No exceptions, deviations or substitutions will be permitted without the approval of the Engineer.
- After the engineer reviews the submittals for conformance with the design concept of the project, the Engineer will stamp the drawings indicating their status. Since the Engineer review is for conformance with 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 Departments approval thereof. The Contractor must be in full compliance with contract and specification requirements.

### **Maintenance and Responsibility**

Revise Article 801.11 to read as follows.

- 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, Cook County Highway Department, Private Developer, or the Municipality in which they are located. Once the Contractor has begun any work on any portion of the project all traffic signals within the limits of this contract or those which have the item "Maintenance of Existing Traffic Signal Installation", "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation", shall become the full responsibility of the Contractor. The Contractor shall supply the engineer and the Department's Electrical Maintenance Contractor a 24-hour emergency contact name and telephone number.
- b) When the project has a pay item for "Maintenance of Existing Traffic Signal Installation", "Temporary Traffic Signal Installation(s)" and/or "Maintenance of Existing Flashing Beacon Installation", the Contractor must notify both the Design Engineer at (312) 603-1730 and the Department's Electrical Maintenance Contractor, of their intent to begin any physical construction work on the Contract or any portion thereof. This notification must be made a minimum of seven (7) working days prior to the start of construction to allow sufficient time for inspection of the existing traffic signal installation(s) and transfer of maintenance to the Contractor. If work is started prior to an inspection, maintenance of the traffic signal installation(s) will be transferred to the Contractor without an inspection. The Contractor will become responsible for repairing or replacing all equipment that is not operating properly or is damaged at no cost to the owner of the traffic signal. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal installation will not be accepted.
- c) Projects which call for the storage and re-use of existing traffic signal equipment shall meet the requirements of Article 801.15(C) of the Standard Specifications, which call for a 30 day test period prior to project acceptance.
- d) Contracts such as pavement grinding or patching which result in the destruction of traffic signal loops do not require maintenance transfer, but require a notification of intent to work and an inspection. A minimum of seven (7) working days prior to the loop removal, the Contractor shall notify the Design Engineer at (312) 603-1730 and the Department's Electrical Maintenance Contractor, at which time arrangements will be made to adjust the traffic controller timing to compensate for the absence of detection. See additional requirements in these specifications under Inductive Loop Detector.
- e) The Contractor is further advised that the existing traffic signal(s), and/or the existing temporary installation(s), must remain in operation during all construction stages except for the most essential down time. Any shutdown of the traffic signal installation(s), for a period to exceed fifteen (15) minutes, must have the prior approval of the Engineer. Such approval will generally only be granted during the period extending from 10:00 a.m. to 3:00 p.m. on weekdays. Shutdowns will not be allowed during inclement weather or during Holiday

periods. Any other traffic signal shutdown, either for periods in excess of one (1) hour or outside of the 10:00 a.m. to 3:00 p.m. weekday period must have prior approval of the Engineer. The Contractor, prior to the commencement of his work, shall notify the State Electrical Maintenance Contractor, the Cook County Electrical Maintenance Contractor, or the concerned Municipality, of his intent to perform this work.

- f) The Contractor shall be fully responsible for the safe and efficient operation of the traffic signals. Any inquiry, complaint or request by the Department, the Department's Electrical Maintenance Contractor or the public, shall be investigated and repairs begun within one hour. Failure to provide this service will result in liquidated damages of \$500 per day per occurrence. In addition, the Department reserves the right to assign any work not completed within this timeframe to the Electrical Maintenance Contractor. All costs associated to repair this uncompleted work shall be the responsibility of the Contractor. Failure to pay these costs to the Electrical Maintenance Contractor within one month after the incident will result in additional liquidated damages of \$500 per month per occurrence. Unpaid bills will be deducted from the cost of the Contract. The Department's Electrical Maintenance Contractor may inspect any signaling device on the Department's highway system at any time without notification.
- g) Any damaged equipment or equipment not operating properly from any cause whatsoever shall be repaired with new equipment provided by the contractor at no additional cost to the Contract and/or owner of the traffic signal system all as approved by the Engineer. Final repairs or replacement of damaged equipment must meet the approval of the Engineer prior to or at the time of final inspection otherwise the traffic signal will not be accepted. Cable splices outside the controller cabinet will not be allowed.

**Traffic Signal Inspection (Turn – On)**

Revise Article 801.15b to read as follows.

- a) The Contractor must have all electric work completed, the electrical service installation connected by the utility company and equipment field tested by the Vendor prior to the Department's "turn-on" field inspection. If in the event the Engineer determines the 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. The Department will not grant a field inspection until written certification is provided from the Contractor stating the equipment has been field tested and the intersection is operating according to Contract requirements.
- b) When the road is open to traffic, except as otherwise provided in Section 850, 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 Design Engineer at (312) 603-1730 a minimum of seven (7) working days prior to the time of the requested inspection. The Department will not grant a field inspection until notification is provided from the Contractor that the equipment has been field tested and the intersection is operating according to Contract requirements. The Department's facsimile number is (312) 603-9956. The Contractor must invite local fire department personnel to the turn-on when Emergency Vehicle Pre-emption (EVP) is included in the project.
- c) The Contractor must have all traffic signal work completed and the electrical service installation connected by the utility company prior to requesting an inspection and turn-on of

the traffic signal installation. The Contractor shall be responsible to provide a Police Officer to direct traffic at the time of testing.

- d) The Contractor shall provide a representative from the control Equipment Vendor's office to attend the traffic signal inspection for both permanent and temporary traffic signal turn-ons. Upon demonstration that the signals are operating and all work is completed in accordance with the Contract and to the satisfaction of the Engineer, the Engineer will then allow the signals to be placed in continuous operation. The Agency that is responsible for the maintenance of each traffic signal installation will assume the maintenance upon successful completion of this inspection.
- e) Acceptance of the traffic signal equipment by the Department shall be based upon inspection results at the traffic signal turn-on. If approved, traffic signal acceptance shall be verbal at the turn-on inspection followed by written correspondence from the Engineer. The Contractor shall be responsible for all traffic signal equipment and associated maintenance thereof until Departmental acceptance is granted.
- f) 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.
- g) All punch list work shall be completed within two (2) weeks after the final inspection. The Contractor shall notify the Design Engineer at (312) 603-1730 to inspect all punch list work. Failure to meet these time constraints shall result in liquidated damage charges of \$500 per month per incident.
- h) 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 that have been installed on the job will be at the Contractor's own risk and shall be subject to removal and disposal at the Contractor's expense.
- i) The Contractor shall furnish the Cook County Highway Department with any special tools or wrenches that may be required for assembling or maintaining the control equipment and traffic control signal head assemblies.
- j) All control cable, when complete in place but before permanent connection, shall be subject to insulation tests at the discretion of the Engineer. The tests shall be made with approved insulation resistance testing equipment rated at 500 volts D.C. and witnessed by the Engineer. Results of these tests shall be submitted to the Department in written form, bearing the Engineers signature and shall become part of the project records. A final inspection of the traffic signal installation shall not be held until results of this insulation test have been received.
- k) All equipment such as new controllers and allied central equipment with the exception of cable, conduit, and other materials which require the use of the State of Illinois Materials Testing Laboratories, shall be built in the suppliers shop and inspected by a representative of this Department prior to the installation of such equipment, and upon approval of this equipment an inspection ticket will be issued to the Contractor by the inspection agency (State of Illinois Material Testing Laboratory or the Cook County Highway Mechanical-Electrical Section). The controller and allied control equipment shall be prepared in the suppliers shop and run under a load of a minimum of 500 watts per phase for at least 48

hours before it is inspected for proper operation and sequencing. After it passes this test an inspection ticket will be issued by the Cook County Highway Mechanical-Electrical Section representative and it can then be delivered to the job site for installation.

- l) Upon completion of the installation, a final inspection will be carried out by qualified representatives of the Highway Agencies involved.
- m) If the Contractor fails to comply with any of the aforementioned requirements, the County shall impose such sanction as it may determine to be appropriate including but not limited to withholding all payments to the Contractor on this contract until the provisions of this special provision are complete with and/or implementation of article 108.10 of the standard specifications.

At the final inspection it will be required that the Contractor will have submitted to the Engineer all necessary inspection tickets for all new equipment and materials installed under this Contract. If the Contractor has not obtained the inspection tickets on any portion of the new equipment and materials, the representative of this Department will have the authority to postpone the final inspection until such time as the above has been satisfied. Any postponement of the final inspection for this reason shall not relieve the Contractor of his full maintenance responsibilities until such time as the installation is re-inspected and accepted by the County..

The County requires the following from the Contractor at traffic signal turn-ons.

1. The Contractor shall, at the turn-on furnish one set of signal plans (24"x36") of record with field revisions marked in red ink to the maintaining agency.
2. Notification from the Contractor and the Equipment Vendor of satisfactory field testing.
3. A knowledgeable representative of the controller equipment supplier shall be required at the permanent and temporary traffic signal turn-on. The representative shall be knowledgeable of both cabinet design and controller functions and shall have sufficient test and spare equipment to make the traffic signal installation operational.
4. A copy of the approved material letter.
5. One (1) copy of the operation and service manuals of the signal controller and associated control equipment.
6. Five (5) copies 11" x 17" (280 mm X 430 mm) of the cabinet wiring diagrams and cable logs.
7. The controller manufacturer shall supply a printed form, not to exceed 11" x 17" (280 mm x 430 mm), for recording the traffic signal controller's timings; coordination splits, offsets, cycles; TBC; Time of Day, week and year programs; traffic responsive program, detector phase assignment, type and detector switching; and any other functions programmable from the keyboard. The form shall include a location, date, manufacturers 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.

#### **Location of Underground State and County Maintained Facilities**

Revise Article 803 to read as follows.

If this contract requires the services of an electrical contractor, the Contractor shall be responsible at his/her own expense for locating existing IDOT and CCHD facilities prior to performing any work. If this contract does not require the services of electrical contractor, the

Contractor may request one free locate for existing IDOT and CCHD electrical facilities from the Electrical Maintenance Contractor(s) prior to the start of any work. Additional requests may be at the expense of the Contractor. The location of underground traffic facilities does not relieve the Contractor of their responsibility to repair any facilities damaged during construction at their expense.

The exact location of all utilities shall be field verified by the Contractor before the installation of any components of the traffic signal system. For locations of utilities the local Counties or Municipalities may need to be contacted, in the City of Chicago contact D.I.G.G.E.R. at (312) 744-7000 and for all other locations contact J.U.L.I.E. at 1-800-892-0123.

Basis of Payment: This work will not be paid for directly but shall be considered as incidental to the contract.

If the Contractor fails to comply with any of the aforementioned requirements, the County shall impose such sanctions as it may determine to be appropriate including but not limited to withholding of all payments to the Contractor on this Contract until the provisions of this Special Provision are complied with and/or implementation of Article 108.10 of the Standard Specifications.

**Special Provision**

**Electric Cable**

The installation of an electric cable shall meet the requirements of Section 873 and 1076.04 of the Standard Specifications, except as follows:

The jacket for electric cable in this contract shall be of the polyvinyl chloride type meeting the requirements of IMSA 19-1. (Traffic signal cable shall be solid copper No. 14 unless otherwise specified in the plans or these Special Provisions). No other type of jacket will be allowed, except as follows:

The service cable may have a XLP jacket.

Communications and lead-in cable shall have a gray or chrome jacket.

Electric cable sized No. 12 AWG and smaller shall be solid.

The length of cable slack shall be in accordance with the following schedule:

Location	Cable Slack		Location	Vertical Slack	
Handhole	6.5 ft.	2 m	All Foundations	3.5 ft.	1.1 m
Double Handhole	13 ft.	4 m	Mast Arm Length to Signal = L	20 + L ft.	6.1 + L m
Signal Post	2.ft.	0.6 m	Bracket Mounted	13 ft.	4 m
Controller cabinet	1 ft.	0.3 m	Ped. Pushbutton	4 ft.	1.2 m
Fiber Optic	13 ft.	4 m	Electric Service	13.5 ft.	4.1 m
Electric Service	1 ft.	0.3 m	Service to Ground	13.5 ft.	4.1 m
Ground Cable	1 ft.	0.3 m	Post Mounted	6 ft.	1.8 m

The cable splice connection of the detector loop and the lead-in cable to the controller shall conform to Section 873 of the Standard Specifications or to the requirements set forth in the "District 1 Standard Traffic Signal Design Details".

Heat shrink splices shall be used according to "District 1 Standard Traffic Signal Design Details".

Basis of Payment: This work will be paid for at the contract unit price per **FOOT (METER)** for **ELECTRIC CABLE** of the type, size and number of conductors as specified, which price shall be payment in full for furnishing the material and making all electrical connections and installing the cable complete, measured as specified.

## Special Provision

### Maintenance of Existing Traffic Signal Installation

This item shall consist of maintaining the existing traffic signal installation at an intersection as shown on the plans and as described herein. Full maintenance responsibility shall start as soon as the Contractor begins any physical work on the contract or any portion thereof. The energy charges for the operation of the traffic signal installation shall be paid for by others. The maintenance of an existing traffic signal installation shall meet the requirements of Section 801.11 and 850 of the Standard Specifications except as follows:

This item shall include maintenance of all traffic signal equipment at the intersection, including emergency vehicle pre-emption equipment, master controllers, uninterruptible power supply (UPS and batteries) telephone service installations, communications cables and conduit to adjacent intersections.

Seven 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 Cook County Design Engineer at (312) 603-1730 for an inspection of the installation(s). The Design Engineer shall establish a date and time of inspection and at this time shall check the installation to determine if any corrective work should be done by the State, the County, or the Municipalities Electrical Maintenance Contractor prior to the Contractor taking over the maintenance of the installation(s). The Resident Engineer, the Design Engineer, and the State, County, or Municipality Maintenance Contractor and the Contractor shall mutually agree on the date of maintenance transfer to the Contractor for this contract.

Maintenance Procedures: The Contractor shall perform the following maintenance procedures for each existing installation designated to remain in operation during construction:

- Have on staff electricians with IMSA Level II certification to provide signal maintenance.
- Patrol and inspect each installation every two (2) weeks for proper alignment of signal heads, light detectors, lamp failures, and general operation of the traffic signal.
- Check all controllers every two (2) weeks, which will include visually inspecting all timing intervals, relays, detectors, and pre-emption equipment to insure that they are functioning properly. This item includes, as routine maintenance, all portions of emergency vehicle pre-emption equipment.
- Provide immediate corrective action to replace burned out lamps or damaged sockets. When lamps are replaced, the reflector and lens shall be cleaned. All replacement lamps shall meet the approval of the Engineer. The Contractor shall repair or replace all defective equipment from any cause whatsoever.
- Maintain in stock at all times a sufficient amount of materials and equipment to provide effective temporary and permanent repairs.
- 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. A near right signal must also be maintained. When repairs at a signalized intersection require that the controller be disconnected and power is available, the Contractor shall place the traffic signal installation

on flashing operation. The signals shall flash RED for all directions unless a different indication has been specified by the Engineer. The Contractor is required to place stop signs (R1-1-36) at each approach to the intersection as a temporary means of regulating traffic. At approaches, where a Yellow Flashing indication is necessary, as directed by the Engineer, stop signs will not be required. The Contractor shall furnish and equip all his vehicles assigned to the maintenance of traffic signal installations with a sufficient number of Stop Signs as specified herein. The Contractor shall maintain sufficient number of spare Stop Signs in stock at all times to replace Stop Signs which may be damaged or stolen.

- Replace defective or damaged equipment. If the proper sequence with full detection cannot be obtained immediately, a controller which will provide the proper sequence and full detection shall be installed within twelve (12) hours of removal of the original controller.
- The Contractor shall be required to maintain the existing type of equipment and sequence of operations during the period of time that the original control equipment is being overhauled
- Provide the Engineer with the names, addresses, and telephone numbers of two (2) persons qualified and assigned to the maintenance of the traffic signal installation. These people must be made available 24 hours per day, each, and every day of the year for emergency calls by the Engineer.
- Respond to all emergency calls from the Department or municipality within one hour after notification and provide immediate corrective action. When equipment has been damaged or becomes faulty beyond repair, the Contractor shall replace it with new and identical equipment. The cost of furnishing and installing the replaced equipment shall be borne by the Contractor at no additional charge to the State or County. 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 temporary 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 or the County's Electrical Maintenance Contractor perform the maintenance work required. The State's or County'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.

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.

Basis of Payment: This work will be paid for at the contract unit price **EACH** for **MAINTENANCE OF EXISTING TRAFFIC SIGNAL INSTALLATION**, which price shall be payment in full for all materials, equipment, and labor necessary to maintain the existing traffic signals as shown on the plans. Each intersection shall be paid for separately.

State of Illinois  
Department of Transportation  
Bureau of Local Roads and Streets

SPECIAL PROVISION  
FOR  
COOPERATION WITH UTILITIES

Effective: January 1, 1999  
Revised: January 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

Replace Article 105.07 of the Standard Specifications with the following:

**"105.07 Cooperation with Utilities.** The adjustment of utilities consists of the relocation, removal, replacement, rearrangements, reconstruction, improvement, disconnection, connection, shifting, new installation or altering of an existing utility facility in any manner.

When the plans or special provisions include information pertaining to the location of underground utility facilities, such information represents only the opinion of the Department as to the location of such utilities and is only included for the convenience of the bidder. The Department assumes no responsibility in respect to the sufficiency or the accuracy of the information shown on the plans relative to the location of the underground utility facilities.

Utilities which are to be adjusted shall be adjusted by the utility owner or the owner's representative or by the Contractor as a contract item. Generally, arrangements for adjusting existing utilities will be made by the Department prior to project construction; however, utilities will not necessarily be adjusted in advance of project construction and, in some cases, utilities will not be removed from the proposed construction limits. When utility adjustments must be performed in conjunction with construction, the utility adjustment work will be shown on the plans and/or covered by Special Provisions.

When the Contractor discovers a utility has not been adjusted by the owner or the owner's representative as indicated in the contract documents, or the utility is not shown on the plans or described in the Special Provisions as to be adjusted in conjunction with construction, the Contractor shall not interfere with said utility, and shall take proper precautions to prevent damage or interruption of the utility and shall promptly notify the Engineer of the nature and location of said utility.

All necessary adjustments, as determined by the Engineer, of utilities not shown on the plans or not identified by markers, will be made at no cost to the Contractor except traffic structures, light poles, etc., that are normally located within the proposed construction limits as hereinafter defined will not be adjusted unless required by the proposed improvement.

(a) Limits of Proposed Construction for Utilities Paralleling the Roadway. For the purpose of this Article, limits of proposed construction for utilities extending in the same longitudinal direction as the roadway, shall be defined as follows:

(1) The horizontal limits shall be a vertical plane, outside of, parallel to, and 600 mm (2 ft) distant at right angles from the plan or revised slope limits.

In cases where the limits of excavation for structures are not shown on the plans, the horizontal limits shall be a vertical plane 1.2 m (4 ft) outside the edges of structure footings or the structure where no footings are required.

(2) The upper vertical limits shall be the regulations governing the roadbed clearance for the specific utility involved.

(3) The lower vertical limits shall be the top of the utility at the depth below the proposed grade as prescribed by the governing agency or the limits of excavation, whichever is less.

(b) Limits of Proposed Construction for Utilities Crossing the Roadway. For the purpose of this Article, limits of proposed construction for utilities crossing the roadway in a generally transverse direction shall be defined as follows:

(1) Utilities crossing excavations for structures that are normally made by trenching such as sewers, underdrains, etc. and all minor structures such as manholes, inlets, foundations for signs, foundations for traffic signals, etc., the limits shall be the space to be occupied by the proposed permanent construction unless otherwise required by the regulations governing the specific utility involved.

(2) For utilities crossing the proposed site of major structures such as bridges, sign trusses, etc., the limits shall be as defined above for utilities extending in the same general direction as the roadway.

The Contractor may make arrangements for adjustment of utilities outside of the limits of proposed construction provided the Contractor furnishes the Department with a signed agreement with the utility owner covering the adjustments to be made. The cost of any adjustments made outside the limits of proposed construction shall be the responsibility of the Contractor unless otherwise provided.

The Contractor shall request all utility owners to field locate their facilities according to Article 107.31. The Engineer may make the request for location from the utility after receipt of notice from the Contractor. On request, the Engineer will make an inspection to verify that the utility company has field located its facilities, but will not assume responsibility for the accuracy of such work. The Contractor shall be responsible for maintaining the excavations or markers provided by the utility owners. This field location procedure may be waived if the utility owner has stated in writing to the Department it is satisfied the construction plans are sufficiently accurate. If the utility owner does not submit such statement to the Department, and they do not field locate their facilities in both horizontal and vertical alignment, the Engineer will authorize the Contractor in writing to proceed to locate the facilities in the most economical and reasonable manner, subject to the approval of the Engineer, and be paid according to Article 109.04.

The Contractor shall coordinate with any planned utility adjustment or new installation and the Contractor shall take all precautions to prevent disturbance or damage to utility facilities. Any failure on the part of the utility owner, or their representative, to proceed with any planned utility adjustment or new installation shall be reported promptly by the Contractor to the Engineer orally and in writing.

The Contractor shall take all necessary precautions for the protection of the utility facilities. The Contractor shall be responsible for any damage or destruction of utility facilities resulting from neglect, misconduct, or omission in the Contractor's manner or method of execution or nonexecution of the work, or caused by defective work or the use of unsatisfactory materials. Whenever any damage or destruction of a utility facility occurs as a result of work performed by the Contractor, the utility company will be immediately notified. The utility company will make arrangements to restore such facility to a condition equal to that existing before any such damage or destruction was done.

It is understood and agreed that the Contractor has considered in the bid all of the permanent and temporary utilities in their present and/or adjusted positions.

No additional compensation will be allowed for any delays, inconvenience, or damage sustained by the Contractor due to any interference from the said utility facilities or the operation of relocating the said utility facilities.

State of Illinois  
Department of Transportation  
Bureau of Local Roads and Streets

SPECIAL PROVISION  
FOR  
INSURANCE

Effective: February 1, 2007  
Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

County of Lake

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City of Highland Park

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The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

## ALKALI-SILICA REACTION FOR CAST-IN-PLACE CONCRETE (BDE)

Effective: August 1, 2007  
 Revised: January 1, 2009

Description. This special provision is intended to reduce the risk of a deleterious alkali-silica reaction in concrete exposed to humid or wet conditions. The special provision is not intended or adequate for concrete exposed to potassium acetate, potassium formate, sodium acetate or sodium formate. The special provision shall not apply to the dry environment (humidity less than 60 percent) found inside buildings for residential or commercial occupancy. The special provision shall also not apply to precast products or precast prestressed products.

Aggregate Expansion Values. Each coarse and fine aggregate will be tested by the Department for alkali reaction according to ASTM C 1260. The test will be performed with Type I or II cement having a total equivalent alkali content ( $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ ) of 0.90 percent or greater. The Engineer will determine the assigned expansion value for each aggregate, and these values will be made available on the Department's Alkali-Silica Potential Reactivity Rating List. The Engineer may differentiate aggregate based on ledge, production method, gradation number, or other factors. An expansion value of 0.05 percent will be assigned to limestone or dolomite coarse aggregates and 0.03 percent to limestone or dolomite fine aggregates (manufactured stone sand); however the Department reserves the right to perform the ASTM C.1260 test.

Aggregate Groups. Each combination of aggregates used in a mixture will be assigned to an aggregate group. The point at which the coarse aggregate and fine aggregate expansion values intersect in the following table will determine the group.

AGGREGATE GROUPS			
Coarse Aggregate or Coarse Aggregate Blend  ASTM C 1260 Expansion	Fine Aggregate or Fine Aggregate Blend  ASTM C 1260 Expansion		
	$\leq 0.16\%$	$> 0.16\% - 0.27\%$	$> 0.27\%$
	$\leq 0.16\%$	Group I	Group II
$> 0.16\% - 0.27\%$	Group II	Group II	Group III
$> 0.27\%$	Group III	Group III	Group IV

Mixture Options. Based upon the aggregate group, the following mixture options shall be used; however, the Department may prohibit a mixture option if field performance shows a deleterious alkali-silica reaction or Department testing indicates the mixture may experience a deleterious alkali-silica reaction.

- Group I - Mixture options are not applicable. Use any cement or finely divided mineral.
- Group II - Mixture options 1, 2, 3, 4, or 5 shall be used.
- Group III - Mixture options 1, 2 and 3 combined, 4, or 5 shall be used.

Group IV - Mixture options 1, 2 and 4 combined, or 5 shall be used.

For Class PP-3 concrete the mixture options are not applicable, and any cement may be used with the specified finely divided minerals.

- a) Mixture Option 1. The coarse or fine aggregates shall be blended to place the material in a group that will allow the selected cement or finely divided mineral to be used.

When a coarse or fine aggregate is blended, the weighted expansion value shall be calculated separately for the coarse and fine aggregate as follows:

$$\text{Weighted Expansion Value} = (a/100 \times A) + (b/100 \times B) + (c/100 \times C) + \dots$$

Where: a, b, c... = percentage of aggregate in the blend;  
A, B, C... = expansion value for that aggregate.

- b) Mixture Option 2. A finely divided mineral shall be used as described in 1), 2), 3), or 4) that follow. The replacement ratio is defined as "finely divided mineral:portland cement".

- 1) Class F Fly Ash. For Class PV, BS, MS, DS, SC, and SI concrete and cement aggregate mixture II (CAM II), Class F fly ash shall replace 15 percent of the portland cement at a minimum replacement ratio of 1.5:1.

- 2) Class C Fly Ash. For Class PV, MS, SC, and SI Concrete, Class C fly ash with 18 percent to less than 26.5 percent calcium oxide content, and less than 2.0 percent loss on ignition, shall replace 20 percent of the portland cement at a minimum replacement ratio of 1:1; or at a minimum replacement ratio of 1.25:1 if the loss on ignition is 2.0 percent or greater. Class C fly ash with less than 18 percent calcium oxide content shall replace 20 percent of the portland cement at a minimum replacement ratio of 1.25:1.

For Class PP-1, RR, BS, and DS concrete and CAM II, Class C fly ash with less than 26.5 percent calcium oxide content shall replace 15 percent of the portland cement at a minimum replacement ratio of 1.5:1.

- 3) Ground Granulated Blast-Furnace Slag. For Class PV, BS, MS, SI, DS, and SC concrete, ground granulated blast-furnace slag shall replace 25 percent of the portland cement at a minimum replacement ratio of 1:1.

For Class PP-1 and RR concrete, ground granulated blast-furnace slag shall replace 15 percent of the portland cement at a minimum replacement ratio of 1.5:1.

For Class PP-2, ground granulated blast-furnace slag shall replace 25 to 30 percent of the portland cement at a minimum replacement ratio of 1:1.

- 4) Microsilica or High Reactivity Metakaolin. Microsilica solids or high reactivity metakaolin shall be added to the mixture at a minimum 25 lb/cu yd (15 kg/cu m) or 27 lb/cu yd (16 kg/cu m) respectively.
- c) Mixture Option 3. The cement used shall have a maximum total equivalent alkali content ( $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ ) of 0.60 percent. When aggregate in Group II is involved, any finely divided mineral may be used with a portland cement.
- d) Mixture Option 4. The cement used shall have a maximum total equivalent alkali content ( $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ ) of 0.45 percent. When aggregate in Group II or III is involved, any finely divided mineral may be used with a portland cement.
- e) Mixture Option 5. The proposed cement or finely divided mineral may be used if the ASTM C 1567 expansion value is  $\leq 0.16$  percent when performed on the aggregate in the concrete mixture with the highest ASTM C 1260 test result. The ASTM C 1567 test will be valid for two years, unless the Engineer determines the materials have changed significantly. For latex concrete, the ASTM C 1567 test shall be performed without the latex. The 0.20 percent autoclave expansion limit in ASTM C 1567 shall not apply.

If during the two year time period the Contractor needs to replace the cement, and the replacement cement has an equal or lower total equivalent alkali content ( $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ ), a new ASTM C 1567 test will not be required.

Testing. If an individual aggregate has an ASTM C 1260 expansion value  $> 0.16$  percent, an ASTM C 1293 test may be performed by the Contractor to evaluate the Department's ASTM C 1260 test result. The ASTM C 1293 test shall be performed with Type I or II cement having a total equivalent alkali content ( $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ ) of 0.80 percent or greater. The interior vertical wall of the ASTM C 1293 recommended container (pail) shall be half covered with a wick of absorbent material consisting of blotting paper. If the testing laboratory desires to use an alternate container or wick of absorbent material, ASTM C 1293 test results with an alkali-reactive aggregate of known expansion characteristics shall be provided to the Engineer for review and approval. If the expansion is less than 0.040 percent after one year, the aggregate will be assigned an ASTM C 1260 expansion value of 0.08 percent that will be valid for two years, unless the Engineer determines the aggregate has changed significantly.

The Engineer reserves the right to verify a Contractor's ASTM C 1293 or 1567 test result. The Engineer will not accept the result if the precision and bias for the test methods are not met.

The laboratory performing the ASTM C 1567 test shall either be accredited by the AASHTO Materials Reference Laboratory (AMRL) for ASTM C 227 under Portland Cement Concrete or Aggregate; or shall be inspected for Hydraulic Cement - Physical Tests by the Cement and Concrete Reference Laboratory (CCRL) and shall be approved by the Department. The laboratory performing the ASTM C 1293 test shall be inspected for Portland Cement Concrete by CCRL and shall be approved by the Department.

**APPROVAL OF PROPOSED BORROW AREAS, USE AREAS, AND/OR WASTE AREAS  
INSIDE ILLINOIS STATE BORDERS (BDE)**

Effective: November 1, 2008

Revise the title of Article 107.22 of the Standard Specifications to read:

**"107.22 Approval of Proposed Borrow Areas, Use Areas, and/or Waste Areas Inside  
Illinois State Borders."**

Add the following sentence to the end of the first paragraph of Article 107.22 of the Standard Specifications:

"Proposed borrow areas, use areas, and/or waste areas outside of Illinois shall comply with Article 107.01."

80207

## CEMENT (BDE)

Effective: January 1, 2007

Revised: April 1, 2009

Revise Section 1001 of the Standard Specifications to read:

### "SECTION 1001. CEMENT

**1001.01 Cement Types.** Cement shall be according to the following.

- (a) Portland Cement. Acceptance of portland cement shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Portland or Blended Cement Acceptance Procedure for Qualified and Non-Qualified Plants".

Portland cement shall be according to ASTM C 150, and shall meet the standard physical and chemical requirements. Type I or Type II may be used for cast-in-place, precast, and precast prestressed concrete. Type III may be used according to Article 1020.04, or when approved by the Engineer. All other cements referenced in ASTM C 150 may be used when approved by the Engineer.

The total of all organic processing additions shall be a maximum of 1.0 percent by weight (mass) of the cement. The total of all inorganic processing additions shall be a maximum of 4.0 percent by weight (mass) of the cement. However, a cement kiln dust inorganic processing addition shall be limited to a maximum of 1.0 percent. Organic processing additions shall be limited to grinding aids that improve the flowability of cement, reduce pack set, and improve grinding efficiency. Inorganic processing additions shall be limited to granulated blast-furnace slag according to the chemical requirements of AASHTO M 302, Class C fly ash according to the chemical requirements of AASHTO M 295, and cement kiln dust.

- (b) Portland-Pozzolan Cement. Acceptance of portland-pozzolan cement shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Portland or Blended Cement Acceptance Procedure for Qualified and Non-Qualified Plants".

Portland-pozzolan cement shall be according to ASTM C 595 and shall meet the standard physical and chemical requirements. Type IP may be used for cast-in-place, precast, and precast prestressed concrete, except when Class PP concrete is used. The pozzolan constituent for Type IP shall be a maximum of 21 percent of the weight (mass) of the portland-pozzolan cement.

For cast-in-place construction, portland-pozzolan cement shall not be used in concrete mixtures when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is given, the mix design strength requirement may require the Contractor to increase the cement or eliminate the cement factor reduction for a water-

reducing or high range water-reducing admixture which is permitted according to Article 1020.05(b).

The total of all organic processing additions shall be a maximum of 1.0 percent by weight (mass) of the cement. Organic processing additions shall be limited to grinding aids as defined in (a) above. Inorganic processing additions shall be limited to cement kiln dust at a maximum of 1.0 percent.

- (c) Portland Blast-Furnace Slag Cement. Acceptance of portland blast-furnace slag cement shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Portland or Blended Cement Acceptance Procedure for Qualified and Non-Qualified Plants".

Portland blast-furnace slag cement shall be according to ASTM C 595 and shall meet the standard physical and chemical requirements. Type IS portland blast-furnace slag cement may be used for cast-in-place, precast, and precast prestressed concrete, except when Class PP concrete is used. The blast-furnace slag constituent for Type IS shall be a maximum of 25 percent of the weight (mass) of the portland blast-furnace slag cement.

For cast-in-place construction, portland blast-furnace slag cement shall not be used in concrete mixtures when the air temperature is below 40 °F (4 °C) without permission of the Engineer. If permission is given, the mix design strength requirement may require the Contractor to increase the cement or eliminate the cement factor reduction for a water-reducing or high range water-reducing admixture which is permitted according to Article 1020.05(b).

The total of all organic processing additions shall be a maximum of 1.0 percent by weight (mass) of the cement. Organic processing additions shall be limited to grinding aids as defined in (a) above. Inorganic processing additions shall be limited to cement kiln dust at a maximum of 1.0 percent.

- (d) Rapid Hardening Cement. Rapid hardening cement shall be used according to Article 1020.04 or when approved by the Engineer. The cement shall be on the Department's current "Approved List of Packaged, Dry, Rapid Hardening Cementitious Materials for Concrete Repairs", and shall be according to the following.

- (1) The cement shall have a maximum final set of 25 minutes, according to Illinois Modified ASTM C 191.
- (2) The cement shall have a minimum compressive strength of 2000 psi (13,800 kPa) at 3.0 hours, 3200 psi (22,100 kPa) at 6.0 hours, and 4000 psi (27,600 kPa) at 24.0 hours, according to Illinois Modified ASTM C 109.
- (3) The cement shall have a maximum drying shrinkage of 0.050 percent at seven days, according to Illinois Modified ASTM C 596.

- (4) The cement shall have a maximum expansion of 0.020 percent at 14 days, according to Illinois Modified ASTM C 1038.
- (5) The cement shall have a minimum 80 percent relative dynamic modulus of elasticity; and shall not have a weight (mass) gain in excess of 0.15 percent or a weight (mass) loss in excess of 1.0 percent, after 100 cycles, according to AASHTO T 161, Procedure B.
- (e) Calcium Aluminate Cement. Calcium aluminate cement shall be used only where specified by the Engineer. The cement shall meet the standard physical requirements for Type I cement according to ASTM C 150, except the time of setting shall not apply. The chemical requirements shall be determined according to ASTM C 114 and shall be as follows: minimum 38 percent aluminum oxide ( $Al_2O_3$ ), maximum 42 percent calcium oxide (CaO), maximum 1 percent magnesium oxide (MgO), maximum 0.4 percent sulfur trioxide ( $SO_3$ ), maximum 1 percent loss on ignition, and maximum 3.5 percent insoluble residue.

**1001.02 Uniformity of Color.** Cement contained in single loads or in shipments of several loads to the same project shall not have visible differences in color.

**1001.03 Mixing Brands and Types.** Different brands or different types of cement from the same manufacturing plant, or the same brand or type from different plants shall not be mixed or used alternately in the same item of construction unless approved by the Engineer.

**1001.04 Storage.** Cement shall be stored and protected against damage, such as dampness which may cause partial set or hardened lumps. Different brands or different types of cement from the same manufacturing plant, or the same brand or type from different plants shall be kept separate."

80166

## CERTIFICATION OF METAL FABRICATOR (BDE)

Effective: July 1, 2010

Revise Article 106.08 of the Standard Specifications to read:

**"106.08 Certification of Metal Fabricator.** All fabricators performing work on metal components of structures shall be certified under the appropriate category of the AISC Quality Certification Program as follows.

- (a) Fabricators of the main load carrying steel components of welded plate girder, box girder, truss, and arch structures shall be certified under Category MBr (Major Steel Bridges).
- (b) Fabricators of the main load carrying steel components of rolled beam structures, either simple span or continuous, and overhead sign structures shall be certified under Category SBr (Simple Steel Bridges).

Fabricators of steel or other non-ferrous metal components of structures not certified under (a) or (b) above shall be certified under the program for Bridge and Highway Metal Component Manufacturers."

80260

1166

## CONCRETE ADMIXTURES (BDE)

Effective: January 1, 2003

Revised: April 1, 2009

Replace the first paragraph of Article 1020.05(b) of the Standard Specifications to read:

"(b) Admixtures. The use of admixtures to increase the workability or to accelerate the hardening of the concrete will be permitted when approved by the Engineer. Admixture dosages shall result in the mixture meeting the specified plastic and hardened properties. The Department will maintain an Approved List of Corrosion Inhibitors. Corrosion inhibitor dosage rates shall be according to Article 1020.05(b)(12). The Department will also maintain an Approved List of Concrete Admixtures, and an admixture technical representative shall be consulted when determining an admixture dosage from this list. The dosage shall be within the range indicated on the approved list unless the influence by other admixtures, jobsite conditions (such as a very short haul time), or other circumstances warrant a dosage outside the range. The Engineer shall be notified when a dosage is proposed outside the range. To determine an admixture dosage, air temperature, concrete temperature, cement source and quantity, finely divided mineral sources(s) and quantity, influence of other admixtures, haul time, placement conditions, and other factors as appropriate shall be considered. The Engineer may request the Contractor to have a batch of concrete mixed in the lab or field to verify the admixture dosage is correct. An admixture dosage or combination of admixture dosages shall not delay the initial set of concrete by more than one hour. When a retarding admixture is required or appropriate for a bridge deck or bridge deck overlayer pour, the initial set time shall be delayed until the deflections due to the concrete dead load are no longer a concern for inducing cracks in the completed work. However, a retarding admixture shall not be used to further extend the pour time and justify the alteration of a bridge deck pour sequence.

When determining water in admixtures for water/cement ratio, the Contractor shall calculate 70 percent of the admixture dosage as water, except a value of 50 percent shall be used for a latex admixture used in bridge deck latex concrete overlays."

Revise Section 1021 of the Standard Specifications to read:

### "SECTION 1021. CONCRETE ADMIXTURES

**1021.01 General.** Admixtures shall be furnished in liquid form ready for use. The admixtures shall be delivered in the manufacturer's original containers, bulk tank trucks or such containers or tanks as are acceptable to the Engineer. Delivery shall be accompanied by a ticket which clearly identifies the manufacturer and trade name of the material. Containers shall be readily identifiable as to manufacturer and trade name of the material they contain.

Corrosion inhibitors will be maintained on the Department's Approved List of Corrosion Inhibitors. All other concrete admixture products will be maintained on the Department's

Approved List of Concrete Admixtures. For the admixture submittal, a report prepared by an independent laboratory accredited by the AASHTO Materials Reference Laboratory (AMRL) for Portland Cement Concrete shall be provided. The report shall show the results of physical tests conducted no more than five years prior to the time of submittal, according to applicable specifications. However, for corrosion inhibitors the ASTM G 109 test information specified in ASTM C 1582 is not required to be from and independent lab. All other information in ASTM C 1582 shall be from and independent lab.

Tests shall be conducted using materials and methods specified on a "test" concrete and a "reference" concrete, together with a certification that no changes have been made in the formulation of the material since the performance of the tests. Per the manufacturer's option, the cement content for all required tests shall either be according to applicable specifications or 5.65 cwt/cu yd (335 kg/cu m). Compressive strength test results for six months and one year will not be required.

Prior to the approval of an admixture, the Engineer reserves the right to request a sample for testing. The test and reference concrete mixtures tested by the Engineer will contain a cement content of 5.65 cwt/cu yd (335 kg/cu m). For freeze-thaw testing, the Department will perform the test according to AASHTO T 161, Procedure B. The flexural strength test will be performed according to AASHTO T 177. If the Engineer decides to test the admixture, the manufacturer shall submit AASHTO T 197 water content and set time test results on the standard cement used by the Department. The test and reference concrete mixture shall contain a cement content of 5.65 cwt/cu yd (335 kg/cu m). The manufacturer may select their lab or an independent lab to perform this testing. The laboratory is not required to be accredited by AASHTO.

The manufacturer shall include in the submittal the following admixture information: the manufacturing range for specific gravity, the midpoint and manufacturing range for residue by oven drying, and the manufacturing range for pH. The submittal shall also include an infrared spectrophotometer trace no more than five years old.

For air-entraining admixtures according to Article 1021.02, the specific gravity allowable manufacturing range shall be established by the manufacturer and the test method shall be according to ASTM C 494. For residue by oven drying and pH, the allowable manufacturing range and test methods shall be according to ASTM C 260.

For admixtures according to Articles 1021.03, 1021.04, 1021.05, 1021.06, and 1021.07, the pH allowable manufacturing range shall be established by the manufacturer and the test method shall be according to ASTM E 70. For specific gravity and residue by oven drying, the allowable manufacturing range and test methods shall be according to ASTM C 494.

When test results are more than seven years old, the manufacturer shall re-submit the infrared spectrophotometer trace and the report prepared by an independent laboratory accredited by AASHTO.

All admixtures, except chloride-based accelerators, shall contain a maximum of 0.3 percent chloride by weight (mass).

Random field samples may be taken by the Department to verify an admixture meets specification. A split sample will be provided to the manufacturer if requested. Admixtures that do not meet specification requirements or an allowable manufacturing range established by the manufacturer shall be replaced with new material.

**1021.02 Air-Entraining Admixtures.** Air-entraining admixtures shall be according to AASHTO M 154.

**1021.03 Retarding and Water-Reducing Admixtures.** The admixture shall be according to the following.

- (a) The retarding admixture shall be according to AASHTO M 194, Type B (retarding) or Type D (water-reducing and retarding).
- (b) The water-reducing admixture shall be according to AASHTO M 194, Type A.
- (c) The high range water-reducing admixture shall be according to AASHTO M 194, Type F (high range water-reducing) or Type G (high range water-reducing and retarding).

**1021.04 Accelerating Admixtures.** The admixture shall be according to AASHTO M 194, Type C (accelerating) or Type E (water reducing and accelerating).

**1021.05 Self-Consolidating Admixtures.** The self-consolidating admixture system shall consist of either a high range water-reducing admixture only or a high range water-reducing admixture combined with a separate viscosity modifying admixture. The one or two component admixture system shall be capable of producing a concrete mixture that can flow around reinforcement and consolidate under its own weight without additional effort and without segregation.

The high range water-reducing admixture shall be according to AASHTO M 194, Type F.

The viscosity modifying admixture shall be according to ASTM C 494, Type S (specific performance).

**1021.06 Rheology-Controlling Admixture.** The rheology-controlling admixture shall be capable of producing a concrete mixture with a lower yield stress that will consolidate easier for slipform applications used by the Contractor. The rheology-controlling admixture shall be according to ASTM C 494, Type S (specific performance).

**1021.07 Corrosion Inhibitor.** The corrosion inhibitor shall be according to one of the following.

(a) Calcium Nitrite. The corrosion inhibitor shall contain a minimum 30 percent calcium nitrite by weight (mass) of solution, and shall comply with the requirements of AASHTO M 194, Type C (accelerating).

(b) Other Materials. The corrosion inhibitor shall be according to ASTM C 1582."

80094

## CONCRETE MIX DESIGNS (BDE)

Effective: April 1, 2009

Add the following to Article 1020.05(c) of the Standard Specifications:

"(5) Performance Based Finely Divided Mineral Combination. For Class PV and SI concrete a performance based finely divided mineral combination may be used. The minimum cement factor, maximum cement factor, and water cement ratio of Article 1020.04 shall be replaced with the values below, and the performance based finely divided mineral combination herein is an alternative to Articles 1020.05(c)(1), (c)(2), (c)(3), and (c)(4). The mix design shall meet the following requirements and the Engineer may request a trial batch.

- a. The mixture shall contain a minimum of 375 lbs/cu yd (222 kg/cu m) of portland cement. For a blended cement, a sufficient amount shall be used to obtain the required 375 lbs/cu yd (222 kg/cu m) of portland cement in the mixture. For example, a blended cement stated to have 20 percent finely divided mineral, ignoring any ASTM C 595 tolerance on the 20 percent, would require a minimum of 469 lbs/cu yd (278 kg/cu m) of material in the mixture. When the mixture is designed for cement content from 375 lbs/cu yd (222 kg/cu m) to 400 lbs/cu yd (237 kg/cu m), the total of organic processing additions, inorganic processing additions, and limestone addition in the cement shall not exceed 5.0 percent.
- b. The mixture shall contain a maximum of two finely divided minerals. The finely divided mineral in a blended cement shall count toward the total number of finely divided minerals allowed. The finely divided mineral(s) shall constitute a maximum of 35.0 percent of the total cement plus finely divided mineral(s). The fly ash portion shall not exceed 30.0 percent for Class C fly ash or 25.0 percent for Class F fly ash. The Class C and F fly ash combination shall not exceed 30.0 percent. The ground granulated blast-furnace slag portion shall not exceed 35.0 percent. The microsilica or high-reactivity metakaolin portion used together or separately shall not exceed 5.0 percent. The finely divided mineral in the blended cement shall apply to the maximum 35.0 percent, and shall be determined as discussed in a. above for determining portland cement in blended cement.
- c. For central mixed Class PV and SI concrete, the mixture shall contain a minimum of 535 lbs/cu yd (320 kg/cu m) of cement and finely divided mineral(s) summed together, and a water-reducing admixture shall be used. The value shall be 565 lbs/cu yd (335 kg/cu m) without a water-reducing admixture.

For truck mixed or shrink mixed Class PV and SI concrete, the mixture shall contain a minimum of 575 lbs/cu yd (345 kg/cu m) of cement and finely

divided mineral(s) summed together, and a water-reducing admixture shall be used. The value shall be 605 lbs/cu yd (360 kg/cu m) without a water-reducing admixture.

- d. The mixture shall contain a maximum of 705 lbs/cu yd (418 kg/cu m) of cement and finely divided mineral(s) summed together.
- e. The mixture shall have a water/cement ratio of 0.32 – 0.44.
- f. The mixture shall not be used for placement underwater.
- g. The combination of cement and finely divided mineral(s) shall have an ASTM C 1567 expansion value  $\leq 0.16$  percent, and shall be performed on the aggregate in the concrete mixture with the highest ASTM C 1260 test result. The ASTM C 1567 test will be valid for two years, unless the Engineer determines the materials have changed significantly.

If during the two year time period the Contractor needs to replace the portland cement, and the replacement portland cement has an equal or lower total equivalent alkali content ( $\text{Na}_2\text{O} + 0.658\text{K}_2\text{O}$ ), a new ASTM C 1567 test will not be required. However, replacement of a blended cement with another cement will require a new ASTM C 1567 test."

80226

## CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)

Effective: June 1, 2010

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term "equipment" refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted using the phased in approach shown below. Equipment that is of a model year older than the year given for that equipment's respective horsepower range shall be retrofitted:

Effective Dates	Horsepower Range	Model Year
June 1, 2010 <sup>1/</sup>	600-749	2002
	750 and up	2006
June 1, 2011 <sup>2/</sup>	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006
June 1, 2012 <sup>2/</sup>	50-99	2004
	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006

1/ Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

2/ Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

- a) Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (<http://www.epa.gov/otaq/retrofit/verif-list.htm>), or verified by the California Air Resources Board (CARB) (<http://www.arb.ca.gov/diesel/verde/verdev.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.

80261

175

## CONSTRUCTION AIR QUALITY - DIESEL VEHICLE EMISSIONS CONTROL (BDE)

Effective: April 1, 2009

Revised: July 1, 2009

Diesel Vehicle Emissions Control. The reduction of construction air emissions shall be accomplished by using cleaner burning diesel fuel. The term "equipment" refers to any and all diesel fuel powered devices rated at 50 hp and above, to be used on the project site in excess of seven calendar days over the course of the construction period on the project site (including any "rental" equipment).

All equipment on the jobsite, with engine ratings of 50 hp and above, shall be required to: use Ultra Low Sulfur Diesel fuel (ULSD) exclusively (15 ppm sulfur content or less).

Diesel powered equipment in non-compliance will not be allowed to be used on the project site, and is also subject to a notice of non-compliance as outlined below.

The Contractor shall submit copies of monthly summary reports and include certified copies of the ULSD diesel fuel delivery slips for diesel fuel delivered to the jobsite for the reporting time period, noting the quantity of diesel fuel used.

If any diesel powered equipment is found to be in non-compliance with any portion of this specification, the Engineer will issue the Contractor a notice of non-compliance and identify an appropriate period of time, as outlined below under environmental deficiency deduction, in which to bring the equipment into compliance or remove it from the project site.

Any costs associated with bringing any diesel powered equipment into compliance with these diesel vehicle emissions controls shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall also not be grounds for a claim.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists, he/she will notify the Contractor in writing, and direct the Contractor to correct the deficiency within a specified time period. The specified time-period, which begins upon Contractor notification, will be from 1/2 hour to 24 hours long, based on the urgency of the situation and the nature of the deficiency. The Engineer shall be the sole judge regarding the time period.

The deficiency will be based on lack of repair, maintenance and diesel vehicle emissions control.

If the Contractor fails to correct the deficiency within the specified time frame, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end

with the Engineer's written acceptance of the correction. The daily monetary deduction will be \$1,000.00 for each deficiency identified.

If a Contractor or subcontractor accumulates three environmental deficiency deductions in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of contract time, waiver of penalties, or be grounds for any claim.

80237

## CONSTRUCTION AIR QUALITY - IDLING RESTRICTIONS (BDE)

Effective: April 1, 2009

Idling Restrictions. The Contractor shall establish truck-staging areas for all diesel powered vehicles that are waiting to load or unload material at the jobsite. Staging areas shall be located where the diesel emissions from the equipment will have a minimum impact on adjacent sensitive receptors. The Department will review the selection of staging areas, whether within or outside the existing highway right-of-way, to avoid locations near sensitive areas or populations to the extent possible. Sensitive receptors include, but are not limited to, hospitals, schools, residences, motels, hotels, daycare facilities, elderly housing and convalescent facilities. Diesel powered engines shall also be located as far away as possible from fresh air intakes, air conditioners, and windows. The Engineer will approve staging areas before implementation.

Diesel powered vehicle operators may not cause or allow the motor vehicle, when it is not in motion, to idle for more than a total of 10 minutes within any 60 minute period, except under any of the following circumstances:

- 1) The motor vehicle has a gross vehicle weight rating of less than 8000 lb (3630 kg).
- 2) The motor vehicle idles while forced to remain motionless because of on-highway traffic, an official traffic control device or signal, or at the direction of a law enforcement official.
- 3) The motor vehicle idles when operating defrosters, heaters, air conditioners, or other equipment solely to prevent a safety or health emergency.
- 4) A police, fire, ambulance, public safety, other emergency or law enforcement motor vehicle, or any motor vehicle used in an emergency capacity, idles while in an emergency or training mode and not for the convenience of the vehicle operator.
- 5) The primary propulsion engine idles for maintenance, servicing, repairing, or diagnostic purposes if idling is necessary for such activity.
- 6) A motor vehicle idles as part of a government inspection to verify that all equipment is in good working order, provided idling is required as part of the inspection.
- 7) When idling of the motor vehicle is required to operate auxiliary equipment to accomplish the intended use of the vehicle (such as loading, unloading, mixing, or processing cargo; controlling cargo temperature; construction operations, lumbering operations; oil or gas well servicing; or farming operations), provided that this exemption does not apply when the vehicle is idling solely for cabin comfort or to operate non-essential equipment such as air conditioning, heating, microwave ovens, or televisions.
- 8) When the motor vehicle idles due to mechanical difficulties over which the operator has no control.
- 9) The outdoor temperature is less than 32 °F (0 °C) or greater than 80 °F (26 °C).

When the outdoor temperature is greater than or equal to 32 °F (0 °C) or less than or equal to 80 °F (26 °C), a person who operates a motor vehicle operating on diesel fuel shall not cause or allow the motor vehicle to idle for a period greater than 30 minutes in any 60 minute period while waiting to weigh, load, or unload cargo or freight, unless the vehicle is in a line of vehicles that regularly and periodically moves forward.

The above requirements do not prohibit the operation of an auxiliary power unit or generator set as an alternative to idling the main engine of a motor vehicle operating on diesel fuel.

Environmental Deficiency Deduction. When the Engineer is notified, or determines that an environmental control deficiency exists based on non-compliance with the idling restrictions, he/she will notify the Contractor, and direct the Contractor to correct the deficiency.

If the Contractor fails to correct the deficiency a monetary deduction will be imposed. The monetary deduction will be \$1,000.00 for each deficiency identified.

80239

## **DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (DBE)**

Effective: September 1, 2000

Revised: January 1, 2010

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor:

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. This determination is based on an assessment of the type of work, the location of the work, and the availability of

DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform 6 % of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set forth in this Special Provision:

- (a) The bidder documents that enough DBE participation has been obtained to meet the goal; or
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders may consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217)785-4611, or by visiting the Department's web site at [www.dot.il.gov](http://www.dot.il.gov).

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

- (a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.
- (b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.
- (c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:
  - (1) The names and addresses of DBE firms that will participate in the contract;

- (2) A description, including pay item numbers, of the work each DBE will perform;
- (3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
- (4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;
- (5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,
- (6) If the contract goal is not met, evidence of good faith efforts.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document the good faith efforts of the bidder before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan commits sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not commit sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

- (a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

- (1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder

must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

- (2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.
- (3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
- (4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.  
  
b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable.
- (5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
- (6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
- (7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

- (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.
- (b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision and that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons why good faith efforts have not been found.
- (c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217)785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation and/or argument concerning the issue of whether an adequate good faith effort was made to meet the contract goal. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR part 26.55, the provisions of which govern over the summary contained herein.

- (a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.
- (b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.
- (c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.
- (d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:
  - (1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
  - (2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission it receives as a result of the lease arrangement.
- (e) DBE as a material supplier:
  - (1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
  - (2) 100 percent goal credit for the cost of materials or supplies obtained from a DBE manufacturer.
  - (3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements

become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal.

- (a) No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.
- (b) The Contractor must notify and obtain written approval from the Department's Bureau of Small Business Enterprises prior to replacing a DBE or making any change in the participation of a DBE. Approval for replacement will be granted only if it is demonstrated that the DBE is unable or unwilling to perform. The Contractor must make every good faith effort to find another certified DBE subcontractor to substitute for the original DBE. The good faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the contract as the original DBE, to the extent needed to meet the contract goal.
- (c) Any deviation from the DBE condition-of-award or contract specifications must be approved, in writing, by the Department. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract.
- (d) In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:
  - (1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or
  - (2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or
  - (3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonably competitive price. If this occurs, the Contractor

shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

- (e) Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted.
- (f) If the commitment of work is in the form of additional tasks assigned to an existing subcontract, then a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.
- (g) All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement. The Contractor shall not terminate for convenience a DBE listed in the Utilization Plan and then perform the work of the terminated DBE with its own forces, those of an affiliate or those of another subcontractor, whether DBE or not, without first obtaining the written consent of the Bureau of Small Business Enterprises to amend the Utilization Plan. The Contractor shall notify the Bureau of Small Business Enterprises of any termination for reasons other than convenience, and shall obtain approval for inclusion of the substitute DBE in the Utilization Plan. If good faith efforts following a termination of a DBE for cause are not successful, the Contractor shall contact the Bureau of Small Business Enterprises and provide a full accounting of the efforts undertaken to obtain substitute DBE participation. The Bureau of Small Business Enterprises will evaluate the good faith efforts in light of all circumstances surrounding the performance status of the contract, and determine whether the contract goal should be amended.
- (h) The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (j) of this part.
- (i) The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract

until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

- (j) Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor may request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

80029

**DOWEL BARS (BDE)**

Effective: April 1, 2007

Revised: January 1, 2008

Revise the fifth and sixth sentences of Article 1006.11(b) of the Standard Specifications to read:

"The bars shall be epoxy coated according to AASHTO M 284, except the thickness of the epoxy shall be 7 to 12 mils (0.18 to 0.30 mm) and patching of the ends will not be required. The epoxy coating applicator shall be certified according to the current Bureau of Materials and Physical Research Policy Memorandum, "Epoxy Coating Plant Certification Procedure". The Department will maintain an approved list."

80178

## ENGINEER'S FIELD OFFICE TYPE A (BDE)

Effective: April 1, 2007

Revised: August 1, 2008

Revise Article 670.02 of the Standard Specifications to read:

**670.02 Engineer's Field Office Type A.** Type A field offices shall have a minimum ceiling height of 7 ft (2 m) and a minimum floor space 450 sq ft (42 sq m). The office shall be provided with sufficient heat, natural and artificial light, and air conditioning.

The office shall have an electronic security system that will respond to any breach of exterior doors and windows. Doors and windows shall be equipped with locks. Doors shall also be equipped with dead bolt locks or other secondary locking device.

Windows shall be equipped with exterior screens to allow adequate ventilation. All windows shall be equipped with interior shades, curtains, or blinds. Adequate all-weather parking space shall be available to accommodate a minimum of ten vehicles.

Suitable on-site sanitary facilities meeting Federal, State, and local health department requirements shall be provided, maintained clean and in good working condition, and shall be stocked with lavatory and sanitary supplies at all times.

Sanitary facilities shall include hot and cold potable running water, lavatory and toilet as an integral part of the office where available. Solid waste disposal consisting of two waste baskets and an outside trash container of sufficient size to accommodate a weekly provided pick-up service.

In addition, the following furniture and equipment shall be furnished.

- (a) Four desks with minimum working surface 42 x 30 in. (1.1 m x 750 mm) each and five non-folding chairs with upholstered seats and backs.
- (b) One desk with minimum working surface 48 x 72 in. (1.2 x 1.8 m) with height adjustment of 23 to 30 in. (585 to 750 mm).
- (c) One four-post drafting table with minimum top size of 37 1/2 x 48 in. (950 mm x 1.2 m). The top shall be basswood or equivalent and capable of being tilted through an angle of 50 degrees. An adjustable height drafting stool with upholstered seat and back shall also be provided.
- (d) Two free standing four drawer legal size file cabinet with lock and an underwriters' laboratories insulated file device 350 degrees one hour rating.
- (e) One 6 ft (1.8 m) folding table with six folding chairs.

- (f) One equipment cabinet of minimum inside dimension of 44 in. (1100 mm) high x 24 in. (600 mm) wide x 30 in. (750 mm) deep with lock. The walls shall be of steel with a 3/32 in. (2 mm) minimum thickness with concealed hinges and enclosed lock constructed in such a manner as to prevent entry by force. The cabinet assembly shall be permanently attached to a structural element of the field office in a manner to prevent theft of the entire cabinet.
- (g) One refrigerator with a minimum size of 16 cu ft (0.45 cu m) with a freezer unit.
- (h) One electric desk type tape printing calculator.
- (i) A minimum of two communication paths. The configuration shall include:
  - (1) Internet Connection. An internet service connection using telephone DSL, cable broadband, or CDMA wireless technology. Additionally, an 802.11g/N wireless router shall be provided, which will allow connection by the Engineer and up to four Department staff.
  - (2) Telephone Lines. Three separate telephone lines.
- (j) One plain paper copy machine capable of reproducing prints up to 11 x 17 in. (280 x 432 mm) with an automatic feed tray capable of storing 30 sheets of paper. Letter size and 11 x 17 in. (280 x 432 mm) paper shall be provided.
- (k) One plain paper fax machine with paper.
- (l) Two telephones, with touch tone, where available, and a digital telephone answering machine, for exclusive use by the Engineer.
- (m) One electric water cooler dispenser.
- (n) One first-aid cabinet fully equipped.
- (o) One microwave oven, 1 cu ft (0.03 cu m) minimum capacity.
- (p) One fire-proof safe, 0.5 cu ft (0.01 cu m) minimum capacity.
- (q) One electric paper shredder.
- (r) One post mounted rain gauge, located on the project site for each 5 miles (8 km) of project length."

Revise the first sentence of the first paragraph of Article 670.07 of the Standard Specifications to read:

"The building or buildings fully equipped as specified will be paid for on a monthly basis until the building or buildings are released by the Engineer."

Revise the last sentence of the first paragraph of Article 670.07 of the Standard Specifications to read:

"This price shall include all utility costs and shall reflect the salvage value of the building or buildings, equipment, and furniture which become the property of the Contractor after release by the Engineer, except that the Department will pay that portion of the monthly long distance telephone bills that, when combined, exceed \$150."

80179

## EQUIPMENT RENTAL RATES (BDE)

Effective: August 2, 2007

Revised: January 2, 2008

Replace the second and third paragraphs of Article 105.07(b)(4)a. of the Standard Specifications with the following:

“Equipment idled which cannot be used on other work, and which is authorized to standby on the project site by the Engineer, will be paid for according to Article 109.04(b)(4).”

Replace Article 109.04(b)(4) of the Standard Specifications with the following:

“(4) Equipment. Equipment used for extra work shall be authorized by the Engineer. The equipment shall be specifically described, be of suitable size and capacity for the work to be performed, and be in good operating condition. For such equipment, the Contractor will be paid as follows.

- a. Contractor Owned Equipment. Contractor owned equipment will be paid for by the hour using the applicable FHWA hourly rate from the “Equipment Watch Rental Rate Blue Book” (Blue Book) in effect when the force account work begins. The FHWA hourly rate is calculated as follows.

$$\text{FHWA hourly rate} = (\text{monthly rate}/176) \times (\text{model year adj.}) \times (\text{Illinois adj.}) + \text{EOC}$$

Where: EOC = Estimated Operating Costs per hour (from the Blue Book)

The time allowed will be the actual time the equipment is operating on the extra work. For the time required to move the equipment to and from the site of the extra work and any authorized idle (standby) time, payment will be made at the following hourly rate:  $0.5 \times (\text{FHWA hourly rate} - \text{EOC})$ .

All time allowed shall fall within the working hours authorized for the extra work.

The rates above include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs, overhaul and maintenance of any kind, depreciation, storage, overhead, profits, insurance, and all incidentals. The rates do not include labor.

The Contractor shall submit to the Engineer sufficient information for each piece of equipment and its attachments to enable the Engineer to determine the proper equipment category. If a rate is not established in the Blue Book for a particular piece of equipment, the Engineer will establish a rate for that piece of equipment that is consistent with its cost and use in the industry.

- b. Rented Equipment. Whenever it is necessary for the Contractor to rent equipment to perform extra work, the rental and transportation costs of the equipment plus five percent for overhead will be paid. In no case shall the rental rates exceed those of established distributors or equipment rental agencies.

All prices shall be agreed to in writing before the equipment is used."

80189

**LIQUIDATED DAMAGES (BDE)**

Effective: April 1, 2009

Revise the table in Article 108.09 of the Standard Specifications to read:

"Schedule of Deductions for Each Day of Overrun in Contract Time"			
Original Contract Amount		Daily Charges	
From More Than	To and Including	Calendar Day	Work Day
\$ 0	\$ 100,000	\$ 375	\$ 500
100,000	500,000	625	875
500,000	1,000,000	1,025	1,425
1,000,000	3,000,000	1,125	1,550
3,000,000	5,000,000	1,425	1,950
5,000,000	10,000,000	1,700	2,350
10,000,000	And over	3,325	4,650"

80230

## MAST ARM ASSEMBLY AND POLE (BDE)

Effective: January 1, 2008

Revised: January 1, 2009

Revise Article 1077.03 of the Standard Specifications to read:

**"1077.03 Mast Arm Assembly and Pole.** Mast arm assembly and pole shall be as follows.

(a) Steel Mast Arm Assembly and Pole and Steel Combination Mast Arm Assembly and Pole. The steel mast arm assembly and pole and steel combination mast arm assembly and pole shall consist of a traffic signal mast arm, a luminaire mast arm or davit (for combination pole only), a pole, and a base, together with anchor rods and other appurtenances. The configuration of the mast arm assembly, pole, and base shall be according to the details shown on the plans.

(1) Loading. The mast arm assembly and pole, and combination mast arm assembly and pole shall be designed for the loading shown on the Highway Standards or elsewhere on the plans, whichever is greater. The design shall be according to AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 1994 Edition for 80 mph (130 km/hr) wind velocity. However, the arm-to-pole connection for tapered signal and luminaire arms shall be according to the "ring plate" detail as shown in Figure 11-1(f) of the 2002 Interim, to the AASHTO "Standard Specification for Structural Supports for Highway Signs, Luminaries and Traffic Signals" 2001 4<sup>th</sup> Edition.

(2) Structural Steel Grade. The mast arm and pole shall be fabricated according to ASTM A 595, Grade A or B, ASTM A 572 Grade 55, or ASTM A 1011 Grade 55 HSLAS Class 2. The base and flange plates shall be of structural steel according to AASHTO M 270 Grade 50 (M 270M Grade 345). Luminaire arms and trussed arms 15 ft (4.5 m) or less shall be fabricated from one steel pipe or tube size according to ASTM A 53 Grade B or ASTM A 500 Grade B or C. All mast arm assemblies, poles, and bases shall be galvanized according to AASHTO M 111.

(3) Fabrication. The design and fabrication of the mast arm assembly, pole, and base shall be according to the requirements of the Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals published by AASHTO. The mast arm and pole may be of single length or sectional design. If section design is used, the overlap shall be at least 150 percent of the maximum diameter of the overlapping section and shall be assembled in the factory.

The manufacturer will be allowed to slot the base plate in which other bolt circles may fit, providing that these slots do not offset the integrity of the pole. Circumferential welds of tapered arms and poles to base plates shall be full penetration welds.

- (4) Shop Drawing Approval. The Contractor shall submit detailed drawings showing design materials, thickness of sections, weld sizes, and anchor rods to the Engineer for approval prior to fabrication. These drawings shall be at least 11 x 17 in. (275 x 425 mm) in size and of adequate quality for microfilming.
- (b) Anchor Rods. The anchor rods shall be ASTM F 1554 Grade 105, coated by the hot-dip galvanizing process according to AASHTO M 232, and shall be threaded a minimum of 7 1/2 in. (185 mm) at one end and have a bend at the other end. The first 10 in. (250 mm) at the threaded end shall be galvanized. Two nuts, one lock washer, and one flat washer shall be furnished with each anchor rod. All nuts and washers shall be galvanized."

80196

**METAL HARDWARE CAST INTO CONCRETE (BDE)**

Effective: April 1, 2008  
Revised: April 1, 2009

Add the following to Article 503.02 of the Standard Specifications:

“(g) Metal Hardware Cast into Concrete.....1006.13”

Add the following to Article 504.02 of the Standard Specifications:

“(j) Metal Hardware Cast into Concrete.....1006.13”

Revise Article 1006.13 of the Standard Specifications to read:

“**1006.13 Metal Hardware Cast into Concrete.** Unless otherwise noted, all steel hardware cast into concrete, such as inserts, brackets, cable clamps, metal casings for formed holes, and other miscellaneous items, shall be galvanized according to AASHTO M 232 or AASHTO M 111. Aluminum inserts will not be allowed. Zinc alloy inserts shall be according to ASTM B 86, Alloys 3, 5, or 7.

The inserts shall be UNC threaded type anchorages having the following minimum certified proof load.

Insert Diameter	Proof Load
5/8 in. (16 mm)	6600 lb (29.4 kN)
3/4 in. (19 mm)	6600 lb (29.4 kN)
1 in. (25 mm)	9240 lb (41.1 kN)”

80203

**PAVEMENT MARKING REMOVAL (BDE)**

Effective: April 1, 2009

Add the following to the end of the first paragraph of Article 783.03(a) of the Standard Specifications:

"The use of grinders will not be allowed on new surface courses."

80231

## PAYMENTS TO SUBCONTRACTORS (BDE)

Effective: June 1, 2000

Revised: January 1, 2006

Federal regulations found at 49 CFR §26.29 mandate the Department to establish a contract clause to require Contractors to pay subcontractors for satisfactory performance of their subcontracts and to set the time for such payments.

State law also addresses the timing of payments to be made to subcontractors and material suppliers. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, requires that when a Contractor receives any payment from the Department, the Contractor shall make corresponding, proportional payments to each subcontractor and material supplier performing work or supplying material within 15 calendar days after receipt of the Department payment. Section 7 of the Act further provides that interest in the amount of two percent per month, in addition to the payment due, shall be paid to any subcontractor or material supplier by the Contractor if the payment required by the Act is withheld or delayed without reasonable cause. The Act also provides that the time for payment required and the calculation of any interest due applies to transactions between subcontractors and lower-tier subcontractors and material suppliers throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the State Prompt Payment Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

When progress payments are made to the Contractor according to Article 109.07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain. Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause.

This Special Provision does not create any rights in favor of any subcontractor or material supplier against the State or authorize any cause of action against the State on account of any payment, nonpayment, delayed payment, or interest claimed by application of the State Prompt Payment Act. The Department will not approve any delay or postponement of the 15 day requirement except for reasonable cause shown after notice and hearing pursuant to Section

| 7(b) of the State Prompt Payment Act. State law creates other and additional remedies available to any subcontractor or material supplier, regardless of tier, who has not been paid for work properly performed or material furnished. These remedies are a lien against public funds set forth in Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c), and a recovery on the Contractor's payment bond according to the Public Construction Bond Act, 30 ILCS 550.

80022

## PERSONAL PROTECTIVE EQUIPMENT (BDE)

Effective: November 1, 2008

Revise the first sentence of Article 701.12 of the Standard Specifications to read:

"All personnel on foot, excluding flaggers, within the highway right-of-way shall wear a fluorescent orange, fluorescent yellow/green, or a combination of fluorescent orange and fluorescent yellow/green vest meeting the requirements of ANSI/ISEA 107-2004 for Conspicuity Class 2 garments."

80209

## POLYUREA PAVEMENT MARKING (BDE)

Effective: April 1, 2004

Revised: January 1, 2009

Description. This work shall consist of furnishing and applying pavement marking lines.

The type of polyurea pavement marking applied will be determined by the type of reflective media used. Polyurea Pavement Marking Type I shall use glass beads as a reflective media. Polyurea Pavement Marking Type II shall use a combination of composite reflective elements and glass beads as a reflective media.

Polyurea-based liquid pavement markings shall only be applied by Contractors on the list of Approved Polyurea Contractors maintained by the Engineer of Operations and in effect on the date of advertisement for bids.

Materials. Materials shall meet the following requirements:

- (a) Polyurea Pavement Marking. The polyurea pavement marking material shall consist of 100 percent solid two part system formulated and designed to provide a simple volumetric mixing ratio of two components (must be two or three volumes of Part A to one volume of Part B). No volatile or polluting solvents or fillers will be allowed.
- (b) Pigmentation. The pigment content by weight (mass) of component A shall be determined by low temperature ashing according to ASTM D 3723. The pigment content shall not vary more than  $\pm$  two percent from the pigment content of the original qualified paint.

White Pigment shall be Titanium Dioxide meeting ASTM D 476 Type II, Rutile.

Yellow Pigment shall be an Organic Yellow and contain no heavy metals.

- (c) Environmental. Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property.
- (d) Daylight Reflectance. The daylight directional reflectance of the cured polyurea material (without reflective media) shall be a minimum of 80 percent (white) and 50 percent (yellow) relative to magnesium oxide when tested using a color spectrophotometer with a 45 degrees circumferential /zero degrees geometry, illuminant C, and two degrees observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm. In addition, the color of the yellow polyurea shall visually match Color Number 33538 of Federal Standard 595a with chromaticity limits as follows:

X	0.490	0.475	0.485	0.539
Y	0.470	0.438	0.425	0.456

- (e) Weathering Resistance. The polyurea marking material, when mixed in the proper ratio and applied at 14 to 16 mils (0.35 to 0.41 mm) wet film thickness to an aluminum alloy

panel (Federal Test Std. No. 141, Method 2013) and allowed to cure for 72 hours at room temperature, shall be subjected to accelerated weathering for 75 hours. The accelerated weathering shall be completed by using the light and water exposure apparatus (fluorescent UV - condensation type) and tested according to ASTM G 53.

The cycle shall consist of four hours UV exposure at 122 °F (50 °C) and four hours of condensation at 104 °F (40 °C). UVB 313 bulbs shall be used. At the end of the exposure period, the material shall show no substantial change in color or gloss.

(f) Dry Time. The polyurea pavement marking material, when mixed in the proper ratio and applied at 14 to 16 mils (0.35 to 0.41 mm) wet film thickness and with the proper saturation of reflective media, shall exhibit a no-tracking time of ten minutes or less when tested according to ASTM D 711.

(g) Adhesion. The catalyzed polyurea pavement marking materials when applied to a 4 x 4 x 2 in. (100 x 100 x 50 mm) concrete block, shall have a degree of adhesion which results in a 100 percent concrete failure in the performance of this test.

The concrete block shall be brushed on one side and have a minimum strength of 3500 psi (24,100 kPa). A 2 in. (50 mm) square film of the mixed polyurea shall be applied to the brushed surface and allowed to cure for 72 hours at room temperature. A 2 in. (50 mm) square cube shall be affixed to the surface of the polyurea by means of an epoxy glue. After the glue has cured for 24 hours, the polyurea specimen shall be placed on a dynamic testing machine in such a fashion so that the specimen block is in a fixed position and the 2 in. (50 mm) cube (glued to the polyurea surface) is attached to the dynamometer head. Direct upward pressure shall be slowly applied until the polyurea system fails. The location of the break and the amount of concrete failure shall be recorded.

(h) Hardness. The polyurea pavement marking materials when tested according to ASTM D 2240, shall have a shore D hardness of between 70 and 100. Films shall be cast on a rigid substrate at 14 to 16 mils (0.35 to 0.41 mm) in thickness and allowed to cure at room temperature for 72 hours before testing.

(i) Abrasion. The abrasion resistance shall be evaluated according to ASTM D 4060 using a Taber Abrader with a 1,000 gram load and CS 17 wheels. The duration of the test shall be 1,000 cycles. The loss shall be calculated by difference and be less than 120 mgs. The tests shall be run on cured samples of polyurea material which have been applied at a film thickness of 14 to 16 mils (0.35 to 0.41 mm) to code S-16 stainless steel plates. The films shall be allowed to cure at room temperature for at least 72 hours and not more than 96 hours before testing.

(j) Reflective Media. The reflective media shall meet the following requirements:

(1) Type I - The glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications and the following requirements:

- a. First Drop Glass Beads. The first drop glass beads shall be tested by the standard visual method of large glass spheres adopted by the Department. The beads shall have a silane coating and meet the following sieve requirements:

U.S. Standard Sieve Number	Sieve Size	% Passing By Weight (mass)
12	1.70 mm	95-100
14	1.40 mm	75-95
16	1.18 mm	10-47
18	1.00 mm	0-7
20	850 $\mu$ m	0-5

- b. Second Drop Glass Beads. The second drop glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications for Type B.

- (2) Type II - The combination of microcrystalline ceramic elements and glass beads shall meet the following requirements:

- a. First Drop Glass Beads. The first drop glass beads shall meet the following requirements:

1. Composition. The elements shall be composed of a titania opacified ceramic core having clear and or yellow tinted microcrystalline ceramic beads embedded to the outer surface.
2. Index of Refraction. All microcrystalline reflective elements embedded to the outer surface shall have an index of refraction of 1.8 when tested by the immersion method.
3. Acid Resistance. A sample of microcrystalline ceramic beads supplied by the manufacturer, shall show resistance to corrosion of their surface after exposure to a one percent solution ( by weight (mass)) of sulfuric acid. Adding 0.2 oz (5.7 ml) of concentrated acid into the water shall make the one percent acid solution. This test shall be performed by taking a 1 x 2 in. (25 x 50 mm) sample and adhering it to the bottom of a glass tray and placing just enough acid solution to completely immerse the sample. The tray shall be covered with a piece of glass to prevent evaporation and allow the sample to be exposed for 24 hours under these conditions. The acid solution shall be decanted (do not rinse, touch, or otherwise disturb the bead surfaces) and the sample dried while adhered to the glass tray in a 150 °F (66 °C) oven for approximately 15 minutes. Microscope examination (20X) shall show no white (corroded) layer on the entire surface.

- b. Second Drop Glass Beads. The second drop glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications for Type B or the following manufacturer's specification:

1. Sieve Analysis. The glass beads shall meet the following sieve requirements:

U.S. Standard Sieve Number	Sieve Size	% Passing By Weight (mass)
20	850 $\mu\text{m}$	100
30	600 $\mu\text{m}$	75-95
50	300 $\mu\text{m}$	15-35
100	150 $\mu\text{m}$	0-5

The manufacturer of the glass beads shall certify that the treatment of the glass beads meets the requirements of the polyurea manufacturer.

2. Imperfections. The surface of the glass beads shall be free of pits and scratches. The glass beads shall be spherical in shape and shall contain a maximum of 20 percent by weight (mass) of irregular shapes when tested by the standard method using a vibratile inclined glass plate as adopted by the Department.
  3. Index of Refraction. The index of refraction of the glass beads shall be a minimum of 1.50 when tested by the immersion method at 77 °F (25 °C).
- (k) Packaging. Microcrystalline ceramic reflective elements and glass beads shall be delivered in approved moisture proof bags or weather resistant bulk boxes. Each carton shall be legibly marked with the manufacturer, specifications and type, lot number, and the month and year the microcrystalline ceramic reflective elements and/or glass beads were packaged. The letters and numbers used in the stencils shall be a minimum of 1/2 in. (12.7 mm) in height.
- (1) Moisture Proof Bags. Moisture proof bags shall consist of at least five ply paper construction unless otherwise specified. Each bag shall contain 50 lb (22.7 kg) net.
  - (2) Bulk Weather Resistance Boxes. Bulk weather resistance boxes shall conform to Federal Specification PPP-8-640D Class II or latest revision. Boxes are to be weather resistant, triple wall, fluted, corrugated-fiber board. Cartons shall be strapped with two metal straps. Straps shall surround the outside perimeter of the carton. The first strap shall be located approximately 2 in. (50 mm) from the bottom of the carton and the second strap shall be placed approximately in the middle of the carton. All cartons shall be shrink wrapped for protection from moisture. Cartons shall be lined with a minimum 4 mil polyester bag and meet Interstate Commerce Commission requirements. Cartons shall be approximately 38 x 38 in. (1 x 1 m), contain 2000 lb (910 kg) of microcrystalline ceramic reflective elements and/or glass beads and be supported on a wooden pallet with fiber straps.
- (l) Packaging. The material shall be shipped to the job site in substantial containers and shall be plainly marked with the manufacturer's name and address, the name and color of the material, date of manufacture, and batch number.
- (m) Verification. Prior to approval and use of the polyurea pavement marking materials, the manufacturer shall submit a notarized certification of an independent laboratory, together with the results of all tests, stating these materials meet the requirements as set forth

herein. The certification test report shall state the lot tested, manufacturer's name, brand name of polyurea and date of manufacture. The certification shall be accompanied by one 1 pt (1/2 L) samples each of Part A and Part B. Samples shall be sent in the appropriate volumes for complete mixing of Part A and Part B.

After approval by the Department, certification by the polyurea manufacturer shall be submitted for each batch used. New independent laboratory certified test results and samples for testing by the Department shall be submitted any time the manufacturing process or paint formulation is changed. All costs of testing (other than tests conducted by the Department) shall be borne by the manufacturer.

(n) Acceptance samples. Acceptance samples shall consist of one 1 pt (1/2 L) samples of Part A and Part B, of each lot of paint. Samples shall be sent in the appropriate volumes for complete mixing of Part A and Part B. The samples shall be submitted to the Department for testing, together with a manufacturer's certification. The certification shall state the formulation for the lot represented is essentially identical to that used for qualification testing. All, acceptance samples will be taken by a representative of the Department. The polyurea pavement marking materials shall not be used until tests are completed and they have met the requirements as set forth herein.

(o) Material Retainage. The manufacturer shall retain the test sample for a minimum of 18 months.

Equipment. The polyurea pavement marking compounds shall be applied through equipment specifically designed to apply two component liquid materials, glass beads and/or reflective elements in a continuous and skip-line pattern. The two-component liquid materials shall be applied after being accurately metered and then mixed with a static mix tube or airless impingement mixing guns. The static mixing tube or impingement mixing guns shall accommodate plural component material systems that have a volumetric ratio of 2 to 1 or 3 to 1. This equipment shall produce the required amount of heat at the mixing head and gun tip and maintain those temperatures within the tolerances specified. The guns shall have the capacity to deliver materials from approximately 1.5 to 3 gal/min (5.7 to 11.4 L/min) to compensate for a typical range of application speeds of 6 to 8 mph (10 to 13 km/h). The accessories such as spray tip, mix chamber, and rod diameter shall be selected according to the manufacturer's specifications to achieve proper mixing and an acceptable spray pattern. The application equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. This equipment shall also have as an integral part of the gun carriage, a high pressure air spray capable of cleaning the pavement immediately prior to making application.

The equipment shall be capable of spraying both yellow and white polyurea, according to the manufacturer's recommended proportions and be mounted on a truck of sufficient size and stability with an adequate power source to produce lines of uniform dimensions and prevent application failure. The truck shall have at least two polyurea tanks each of 110 gal (415 L) minimum capacity and be equipped with hydraulic systems and agitators. It shall be capable of placing stripes on the left and right sides and placing two lines on a three-line system simultaneously with either line in a solid or intermittent pattern, in yellow or white, and applying the appropriate reflective media according to manufacturer's recommendations. All guns shall be in full view of operations at all times. The equipment shall have a metering device to register

the accumulated installed quantities for each gun, each day. Each vehicle shall include at least one operator who shall be a technical expert in equipment operations and polyurea application techniques. Certification of equipment shall be provided at the pre-construction conference.

The mobile applicator shall include the following features:

- (a) Material Reservoirs. The applicator shall provide individual material reservoirs, or space for the storage of Part A and Part B of the resin composition.
- (b) Heating Equipment. The applicator shall be equipped with heating equipment of sufficient capacity to maintain the individual resin components at the manufacturer's recommended temperature of  $\pm 5$  °F ( $\pm 2.8$  °C) for spray application.
- (c) Dispensing Equipment. The applicator shall be equipped with glass bead and/or reflective element dispensing equipment. The applicator shall be capable of applying the glass beads and/or reflective elements at a rate and combination indicated by the manufacturer.
- (d) Volumetric Usage. The applicator shall be equipped with metering devices or pressure gauges on the proportioning pumps as well as stroke counters to monitor volumetric usage. Metering devices or pressure gauges and stroke counters shall be visible to the Engineer.
- (e) Pavement Marking Placement. The applicator shall be equipped with all the necessary spray equipment, mixers, compressors and other appurtenances to allow for the placement of reflectorized pavement markings in a simultaneous sequence of operations.

The Contractor shall provide an accurate temperature-measuring device(s) that shall be capable of measuring the pavement temperature prior to application of the material, the material temperature at the gun tip and the material temperature prior to mixing.

## CONSTRUCTION REQUIREMENTS

General. The pavement shall be cleaned by a method approved by the Engineer to remove all dirt, grease, glaze, or any other material that would reduce the adhesion of the markings with minimum or no damage to the pavement surface. New portland cement concrete pavements shall be air-blast-cleaned to remove all laitance.

Widths, lengths, and shapes of the cleaned surface shall be of sufficient size to include the full area of the specified pavement marking to be placed.

The cleaning operation shall be a continuous moving operation process with minimum interruption to traffic.

Markings shall be applied to the cleaned surfaces on the same calendar day. If this cannot be accomplished, the surface shall be re-cleaned prior to applying the markings. No markings shall be applied until the Engineer approves the cleaning.

The pavement markings shall be applied to the cleaned road surface, during conditions of dry weather and subsequently dry pavement surfaces at a minimum uniform wet thickness of 15 mils (0.4 mm) according to the manufacturer's installation instructions. On new hot-mix asphalt (HMA) surfaces the pavement markings shall be applied at a minimum uniform wet thickness of 20 mils (0.5 mm). The application of and combination of reflective media (glass beads and/or reflective elements) shall be applied at a rate specified by the manufacturer. At the time of installation the pavement surface temperature and the ambient temperature shall be above 40 °F (4 °C) and rising. The pavement markings shall not be applied if the pavement shows any visible signs of moisture or it is anticipated that damage causing moisture, such as rain showers, may occur during the installation and set periods. The Engineer will determine the atmospheric conditions and pavement surface conditions that produce satisfactory results.

Using the application equipment, the pavement markings shall be applied in the following manner, as a simultaneous operation:

- (a) The surface shall be air-blasted to remove any dirt and residue.
- (b) The resin shall be mixed and heated according to manufacturer's recommendations and sprayed onto the pavement surface.

The edge of the center line or lane line shall be offset a minimum distance of 2 in. (50 mm) from a longitudinal crack or joint. Edge lines shall be approximately 2 in. (50 mm) from the edge of pavement. The finished center and lane lines shall be straight, with the lateral deviation of any 10 ft (3 m) line not to exceed 1 in. (25 mm).

Notification. The Contractor shall notify the Engineer 72 hours prior to the placement of the markings in order that he/she can be present during the operation. At the time of notification, the Contractor shall provide the Engineer the manufacturer and lot numbers of polyurea and reflective media that will be used.

Inspection. The polyurea pavement markings will be inspected following installation according to Article 780.10 of the Standard Specifications, except, no later than December 15, and inspected following a winter performance period that extends 180 days from December 15.

Method of Measurement. This work will be measured for payment as follows:

- (a) Contract Quantities. The requirements for the use of contract quantities shall be according to Article 202.07(a).
- (b) Measured Quantities. Lines will be measured for payment in place in feet (meters). Double yellow lines will be measured as two separate lines.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for POLYUREA PAVEMENT MARKING TYPE I – LINE of the line width specified or for POLYUREA PAVEMENT MARKING TYPE II – LINE of the line width specified.

## PORTLAND CEMENT CONCRETE PLANTS (BDE)

Effective: January 1, 2007

Add the following to Article 1020.11(a) of the Standard Specifications.

- "(9) Use of Multiple Plants in the Same Construction Item. The Contractor may simultaneously use central-mixed, truck-mixed, and shrink-mixed concrete from more than one plant, for the same construction item, on the same day, and in the same pour. However, the following criteria shall be met.
- a. Each plant shall use the same cement, finely divided minerals, aggregates, admixtures, and fibers.
  - b. Each plant shall use the same mix design. However, material proportions may be altered slightly in the field to meet slump and air content criteria. Field water adjustments shall not result in a difference that exceeds 0.02 between plants for water/cement ratio. The required cement factor for central-mixed concrete shall be increased to match truck-mixed or shrink-mixed concrete, if the latter two types of mixed concrete are used in the same pour.
  - c. The maximum slump difference between deliveries of concrete shall be 3/4 in. (19 mm) when tested at the jobsite. If the difference is exceeded, but test results are within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and shall test subsequent deliveries of concrete until the slump difference is corrected. For each day, the first three truck loads of delivered concrete from each plant shall be tested for slump by the Contractor. Thereafter, when a specified test frequency for slump is to be performed, it shall be conducted for each plant at the same time.
  - d. The maximum air content difference between deliveries of concrete shall be 1.5 percent when tested at the jobsite. If the difference is exceeded, but test results are within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and shall test subsequent deliveries of concrete until the air content difference is corrected. For each day, the first three truck loads of delivered concrete from each plant shall be tested for air content by the Contractor. Thereafter, when a specified test frequency for air content is to be performed, it shall be conducted for each plant at the same time.
  - e. Strength tests shall be performed and taken at the jobsite for each plant. When a specified strength test is to be performed, it shall be conducted for each plant at the same time. The difference between plants for their mean strength shall not exceed 450 psi (3100 kPa) compressive and 80 psi (550 kPa) flexural. The strength standard deviation for each plant shall not exceed 650 psi (4480 kPa) compressive and 110 psi (760 kPa) flexural. The mean and standard deviation requirements shall apply to the test of record. If the strength difference requirements are exceeded, the Contractor shall take corrective action.

- f. The maximum haul time difference between deliveries of concrete shall be 15 minutes. If the difference is exceeded, but haul time is within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and check subsequent deliveries of concrete until the haul time difference is corrected."

80170

**PUBLIC CONVENIENCE AND SAFETY (BDE)**

Effective: January 1, 2000

Add the following paragraph after the fourth paragraph of Article 107.09 of the Standard Specifications:

"On weekends, excluding holidays, roadways with Average Daily Traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 P.M. Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical."

80015

RAILROAD PROTECTIVE LIABILITY INSURANCE (5 and 10) (BDE)

Effective: January 1, 2006

Description. Railroad Protective Liability and Property Damage Liability Insurance shall be carried according to Article 107.11 of the Standard Specifications, except the limits shall be a minimum of \$5,000,000 combined single limit per occurrence for bodily injury liability and property damage liability with an aggregate limit of \$10,000,000 over the life of the policy. A separate policy is required for each railroad unless otherwise noted.

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NAMED INSURED & ADDRESS	NUMBER & SPEED OF PASSENGER TRAINS	NUMBER & SPEED OF FREIGHT TRAINS
Union Pacific Railroad 1400 Douglas Street Omaha, NE 68179	19/ Day @ 50 mph	
DOT/AAR No.: 176 826B at Old Deerfield Road RR Division: Chicago	RR Mile Post: 23.68 RR Sub-Division: Milwaukee	
For Freight/Passenger Information Contact: Brian Millerschoen For Insurance Information Contact: James Fisher		Phone: 414/267-4168 Phone: 414/267-4219
Union Pacific Folder: 02598-60		

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Union Pacific Railroad 1400 Douglas Street Omaha, NE 68179	63/ Day @ 70 MPH	
DOT/AAR No.: 176 576R at Lake Cook Road RR Division: Commuter Opera	RR Mile Post: 20.50 RR Sub-Division: Kenosha	
For Freight/Passenger Information Contact: Brian Millerschoen For Insurance Information Contact: James Fisher		Phone: 414/267-4168 Phone: 414/267-4219
Union Pacific Folder: 02598-59		

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Approval of Insurance. The original and one certified copy of each required policy shall be submitted to the following address for approval:

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

The Contractor will be advised when the Department has received approval of the insurance from the railroad(s). Before any work begins on railroad right-of-way, the Contractor shall submit to the Engineer evidence that the required insurance has been approved by the railroad(s). The Contractor shall also provide the Engineer with the expiration date of each required policy.

Basis of Payment. Providing Railroad Protective Liability and Property Damage Liability Insurance will be paid for at the contract unit price per Lump Sum for RAILROAD PROTECTIVE LIABILITY INSURANCE.

80157

## REFLECTIVE SHEETING ON CHANNELIZING DEVICES (BDE)

Effective: April 1, 2007

Revised: November 1, 2008

Revise the seventh paragraph of Article 1106.02 of the Standard Specifications to read:

"At the time of manufacturing, the retroreflective prismatic sheeting used on channelizing devices shall meet or exceed the initial minimum coefficient of retroreflection as specified in the following table. Measurements shall be conducted according to ASTM E 810, without averaging. Sheeting used on cones, drums and flexible delineators shall be reboundable as tested according to ASTM D 4956. Prestriped sheeting for rigid substrates on barricades shall be white and orange. The sheeting shall be uniform in color and devoid of streaks throughout the length of each roll. The color shall conform to the latest appropriate standard color tolerance chart issued by the U.S. Department of Transportation, Federal Highway Administration, and to the daytime and nighttime color requirements of ASTM D 4956.

Initial Minimum Coefficient of Retroreflection candelas/foot candle/sq ft (candelas/lux/sq m) of material				
Observation Angle (deg.)	Entrance Angle (deg.)	White	Orange	Fluorescent Orange
0.2	-4	365	160	150
0.2	+30	175	80	70
0.5	-4	245	100	95
0.5	+30	100	50	40"

Revise the first sentence of the first paragraph of Article 1106.02(c) of the Standard Specifications to read:

"Barricades and vertical panels shall have alternating white and orange stripes sloping downward at 45 degrees toward the side on which traffic will pass."

Revise the third sentence of the first paragraph of Article 1106.02(d) of the Standard Specifications to read:

"The bottom panels shall be 8 x 24 in. (200 x 600 mm) with alternating white and orange stripes sloping downward at 45 degrees toward the side on which traffic will pass."

80183

215

## REINFORCEMENT BARS - STORAGE AND PROTECTION (BDE)

Effective: August 1, 2008

Revised: April 1, 2009

Revise Article 508.03 of the Standard Specifications to read:

**508.03 Storage and Protection.** Reinforcement bars shall be stored off the ground using platforms, skids, or other supports; and shall be protected from mechanical injury and from deterioration by exposure. Epoxy coated bars shall be stored on wooden or padded steel cribbing and all systems for handling shall have padded contact areas. The bars or bundles shall not be dragged or dropped.

When epoxy coated bars are stored in a manner where they will be exposed to the weather more than 60 days prior to use, they shall be protected from deterioration such as that caused by sunlight, salt spray, and weather exposure. The protection shall consist of covering with opaque polyethylene sheeting or other suitable opaque material. The covering shall be secured and allow for air circulation around the bars to minimize condensation under the cover.

Covering of the epoxy coated bars will not be required when the bars are installed and tied, or when they are partially incorporated into the concrete."

80206

## **SUBCONTRACTOR MOBILIZATION PAYMENTS (BDE)**

Effective: April 2, 2005

To account for the preparatory work and operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting in accordance with Article 108.01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be equal to 3 percent of the amount of the subcontract reported on form BC 260A submitted for the approval of the subcontractor's work.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department.

80143

## THERMOPLASTIC PAVEMENT MARKINGS (BDE)

Effective: January 1, 2007

Revise Article 1095.01(a)(2) of the Standard Specifications to read:

“(2) Pigment. The pigment used for the white thermoplastic compound shall be a high-grade pure (minimum 93 percent) titanium dioxide (TiO<sub>2</sub>). The white pigment content shall be a minimum of ten percent by weight and shall be uniformly distributed throughout the thermoplastic compound.

The pigments used for the yellow thermoplastic compound shall not contain any hazardous materials listed in the Environmental Protection Agency Code of Federal Regulations (CFR) 40, Section 261.24, Table 1. The combined total of RCRA listed heavy metals shall not exceed 100 ppm when tested by X-ray fluorescence spectroscopy. The pigments shall also be heat resistant, UV stable and color-fast yellows, golds, and oranges, which shall produce a compound which shall match Federal Standard 595 Color No. 33538. The pigment shall be uniformly distributed throughout the thermoplastic compound.”

Revise Article 1095.01(b)(1)e. of the Standard Specifications to read:

“e. Daylight Reflectance and Color. The thermoplastic compound after heating for four hours ± five minutes at 425 ± 3 °F (218.3 ± 2 °C) and cooled at 77 °F (25 °C) shall meet the following requirements for daylight reflectance and color, when tested, using a color spectrophotometer with 45 degree circumferential/zero degree geometry, illuminant C, and two degree observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.

White: Daylight Reflectance .....75 percent min.

\*Yellow: Daylight Reflectance .....45 percent min.

\*Shall meet the coordinates of the following color tolerance chart.

x	0.490	0.475	0.485	0.530
y	0.470	0.438	0.425	0.456”

Revise Article 1095.01(b)(1)k. of the Standard Specifications to read:

“k. Accelerated Weathering. After heating the thermoplastic for four hours ± five minutes at 425 ± 3 °F (218.3 ± 2 °C) the thermoplastic shall be applied to a steel wool abraded aluminum alloy panel (Federal Test Std. No. 141, Method 2013) at a film thickness of 30 mils (0.70 mm) and allowed to cool for 24 hours at room temperature. The coated panel shall be subjected to accelerated weathering

using the light and water exposure apparatus (fluorescent UV - condensation type) for 75 hours according to ASTM G 53 (equipped with UVB-313 lamps).

The cycle shall consist of four hours UV exposure at 122 °F (50 °C) followed by four hours of condensation at 104 °F (40 °C). UVB 313 bulbs shall be used. At the end of the exposure period, the panel shall not exceed 10 Hunter Lab Delta E units from the original material."

80176

**TRAINING SPECIAL PROVISIONS (BDE)** This Training Special Provision supersedes Section 7b of the Special Provision entitled "Specific Equal Employment Opportunity Responsibilities," and is in implementation of 23 U.S.C. 140(a).

As part of the contractor's equal employment opportunity affirmative action program, training shall be provided as follows:

The contractor shall provide on-the-job training aimed at developing full journeyman in the type of trade or job classification involved. The number of trainees to be trained under this contract will be *one*. In the event the contractor subcontracts a portion of the contract work, he shall determine how many, if any, of the trainees are to be trained by the subcontractor, provided however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this Training Special Provision is made applicable to such subcontract. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training.

The number of trainees shall be distributed among the work classifications on the basis of the contractor's needs and the availability of journeymen in the various classifications within the reasonable area of recruitment. Prior to commencing construction, the contractor shall submit to the Illinois Department of Transportation for approval the number of trainees to be trained in each selected classification and training program to be used. Furthermore, the contractor shall specify the starting time for training in each of the classifications. The contractor will be credited for each trainee employed by him on the contract work who is currently enrolled or becomes enrolled in an approved program and will be reimbursed for such trainees as provided hereinafter.

Training and upgrading of minorities and women toward journeyman status is a primary objective of this Training Special Provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g. by conducting systematic and direct recruitment through public and private sources likely to yield minority and women trainees) to the extent such persons are available within a reasonable area of recruitment. The contractor will be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the contractor is in compliance with this Training Special Provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used the contractor's records should document the findings in each case.

The minimum length and type of training for each classification will be as established in the training program selected by the contractor and approved by the Illinois Department of Transportation and the Federal Highway Administration. The Illinois Department of Transportation and the Federal Highway Administration shall approve a program, if it is reasonably calculated to meet the equal employment opportunity obligations of the contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Furthermore, apprenticeship programs registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau and training programs approved by not necessarily sponsored by the U.S. Department of Labor, Manpower Administration, Bureau of Apprenticeship and Training shall also be considered acceptable provided it is being administered in a manner consistent with the equal employment obligations of Federal-aid highway construction contracts. Approval or acceptance of a training program shall be obtained from the State prior to commencing work on the classification covered by the program. It is the intention of these provisions that training is to be provided in the construction crafts rather than clerk-typists or secretarial-type positions. Training is permissible in lower level management positions such as office engineers, estimators, timekeepers, etc., where the training is oriented toward construction applications. Training in the laborer classification may be permitted provided that significant and meaningful training is provided and approved by the Illinois Department of Transportation and the Federal Highway Administration. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.

Except as otherwise noted below, the contractor will be reimbursed 80 cents per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training of persons in excess of the number specified herein. This reimbursement will be made even though the contractor receives additional training program funds from other sources, provided such other source does not specifically prohibit the contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the contractor where he does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

No payment shall be made to the contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the contractor and evidences a lack of good faith on the part of the contractor in meeting the requirement of this Training Special Provision. It is normally expected that a trainee will begin his training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in his work classification or until he has completed his training program.

It is not required that all trainees be on board for the entire length of the contract. A contractor will have fulfilled his responsibilities under this Training Special Provision if he has provided acceptable training to the number of trainees specified. The number trained shall be determined on the basis of the total number enrolled on the contract for a significant period.

Trainees will be paid at least 60 percent of the appropriate minimum journeyman's rate specified in the contract for the first half of the training period, 75 percent for the third quarter of the training period, and 90 percent for the last quarter of the training period, unless apprentices or trainees in an approved existing program are enrolled as trainees on this project. In that case, the appropriate rates approved by the Departments of Labor or Transportation in connection with the existing program shall apply to all trainees being trained for the same classification who are covered by this Training Special Provision.

The contractor shall furnish the trainee a copy of the program he will follow in providing the training. The contractor shall provide each trainee with a certification showing the type and length of training satisfactorily complete.

The contractor will provide for the maintenance of records and furnish periodic reports documenting his performance under this Training Special Provision.

METHOD OF MEASUREMENT The unit of measurement is in hours.

BASIS OF PAYMENT This work will be paid for at the contract unit price of 80 cents per hour for TRAINEES. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

20338

**WORKING DAYS (BDE)**

Effective: January 1, 2002

The Contractor shall complete the work within *120* working days.

80071

**REQUIRED CONTRACT PROVISIONS  
FEDERAL-AID CONSTRUCTION CONTRACTS**

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**ATTACHMENTS**

- A. Employment Preference for Appalachian Contracts  
(included in Appalachian contracts only)

**I. GENERAL**

1. These contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.

3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.

4. A breach of the following clauses of the Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:

- Section I, paragraph 2;
- Section IV, paragraphs 1, 2, 3, 4 and 7;
- Section V, paragraphs 1 and 2a through 2g.

5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6 and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.

6. Selection of Labor: During the performance of this contract, the contractor shall not:

- a. Discriminate against labor from any other State, possession, or territory of the United States (except for employment preference for Appalachian contracts, when applicable, as specified in Attachment A), or

- b. Employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

**II. NONDISCRIMINATION**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

**1. Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60 (and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

- a. The contractor will work with the State highway agency (SHA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.
- b. The contractor will accept as his operating policy the following statement: "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, preapprenticeship, and/or on-the-job-training."

**2. EEO Officer:** The contractor will designate and make known to the SHA contracting officers an EEO Officer who will have the responsibility for an must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

- a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
- b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
- c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.
- d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees,

applicants for employment and potential employees.  
e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employees referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish which such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.
- b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements have the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)
- c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

- a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
- c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.
- d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

**6. Training and Promotion:**

- a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.
- b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be

in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
- d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

- a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.
- b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
- c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the SHA and shall set forth what efforts have been made to obtain such information.
- d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the SHA.

**8. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

- a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.
- b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from  
and to utilize DBE subcontractors or subcontractors with meaningful  
minority group and female representation among their employees.  
Contractors shall obtain lists of DBE construction firms from SHA

personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

**9. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the SHA and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of

DBE subcontractors or subcontractors with meaningful minority and

female representation among their employees.

b. The contractors will submit an annual report to the SHA each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data.

### III. NONSEGREGATED FACILITIES

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

a. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

b. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

c. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

### IV. PAYMENT OF PREDETERMINED MINIMUM WAGE

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located

on roadways classified as local roads or rural minor collectors, which are exempt.)

#### 1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week and without subsequent deduction or rebate on any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c)] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also, for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon Act and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

#### 2. Classification:

a. The SHA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) the work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) the additional classification is utilized in the area by the construction industry;

(3) the proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) with respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the

contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the DOL, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the question, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advised the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

### 3. Payment of Fringe Benefits:

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate, shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly case equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as a part of the wages of any laborer or mechanic the amount of any cost reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

### 4. Apprentices and Trainees (Programs of the U.S. DOL) and Helpers:

#### a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any

employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid

the full amount of fringe benefits listed on the wage determination

for the applicable classification. If the Administrator for the Wage

and Hour Division determines that a different practice prevails for

the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

#### b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which cases such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration

withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

**c. Helpers:**

Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV. 2. Any worker listed on a payroll at a helper wage rate, who is not a helper under a approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

**5. Apprentices and Trainees (Programs of the U.S. DOT):**

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**6. Withholding:**

The SHA shall upon its own action or upon written request of an authorized representative of the DOL withhold, or cause to be withheld, from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainee's and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the SHA contracting officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

**7. Overtime Requirements:**

No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such workweek unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

**8. Violation:**

Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible thereof shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or

permitted to work in excess of the standard work week of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

**9. Withholding for Unpaid Wages and Liquidated Damages:**

The SHA shall; upon its own action or upon written request of any authorized representative of the DOL withhold, or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

**V. STATEMENTS AND PAYROLLS**

(Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

**1. Compliance with Copeland Regulations (29 CFR 3):**

The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

**2. Payrolls and Payroll Records:**

- a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.
- b. The payroll records shall contain the name, social security number, and address of each such employee; his or her correct classification; hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalent thereof the types described in Section 1(b)(2)(B) of the Davis Bacon Act); daily and weekly number of hours worked; deductions made; and actual wages paid. In addition, for Appalachian contracts, the payroll records shall contain a notation indicating whether the employee does, or does not, normally reside in the labor area as defined in Attachment A, paragraph 1. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees, and ratios and wage rates prescribed in the applicable programs.
- c. Each contractor and subcontractor shall furnish, each week in which any contract work is performed, to the SHA resident engineer a payroll of wages paid each of its employees (including apprentices trainees, and helpers, described in Section IV, paragraphs 4 and 5, and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely

all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for submitting payroll copies of all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

- (1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;
- (2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR 3;
- (3) that each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalent for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S. C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this Section V available for inspection, copying, or transcription by authorized representatives of the SHA, the FHWA, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the SHA, the FHWA, the DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

## VI. RECORD OF MATERIALS, SUPPLIES, AND LABOR

1. On all federal-aid contracts on the national highway system, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR 635) the contractor shall:

- a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.
- b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on Form FHWA-47.
- c. Furnish, upon the completion of the contract, to the SHA resident engineer on Form FHWA-47 together with the data

required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

## VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractors' own organization (23 CFR 635).

- a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.
- b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of Section VII is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the SHA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the SHA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the SHA has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

## VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the SHA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in

surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

#### **IX. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS**

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

##### **NOTICE TO ALL PERSONNEL ENGAGED ON FEDERAL-AID HIGHWAY PROJECTS**

18 U.S.C. 1020 reads as follows:

*“Whoever, being an officer, agent or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or*

*Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or*

*Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;*

*Shall be fined not more than \$10,000 or imprisoned not more than 5 years or both.”*

#### **X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

(Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more).

By submission of this bid or the execution of this contract, or

subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 *et seq.*, as amended by Pub.L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 *et seq.*, as amended by Pub.L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.

2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.

3. That the firm shall promptly notify the SHA of the receipt of any communication from the Director, Office of Federal Activities, EPA indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

4. That the firm agrees to include or cause to be included the requirements of paragraph 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

#### **XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

1. Instructions for Certification - Primary Covered Transactions:

(Applicable to all Federal-aid contracts - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.
- d. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal

is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification in all lower tier covered transactions

and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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#### **Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Primary Covered Transactions**

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

- a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and
- d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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#### **2. Instructions for Certification - Lower Tier Covered Transactions:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealing.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

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2. Where the prospective primary participant is unable to certify

**Certification Regarding Debarment, Suspension, Ineligibility And  
Voluntary Exclusion-Lower Tier Covered Transactions:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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**XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR  
LOBBYING**

(Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**MINIMUM WAGES FOR FEDERAL AND FEDERALLY  
ASSISTED CONSTRUCTION CONTRACTS**

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.

**NOTICE**

The most current **General Wage Determination Decisions** (wage rates) are available on the IDOT web site. They are located on the Letting and Bidding page at <http://www.dot.state.il.us/desenv/delett.html>.

In addition, ten (10) days prior to the letting, the applicable Federal wage rates will be e-mailed to subscribers. It is recommended that all contractors subscribe to the Federal Wage Rates List or the Contractor's Packet through IDOT's subscription service.

PLEASE NOTE: if you have already subscribed to the Contractor's Packet you will automatically receive the Federal Wage Rates.

The instructions for subscribing are at <http://www.dot.state.il.us/desenv/subsc.html>.

If you have any questions concerning the wage rates, please contact IDOT's Chief Contract Official at 217-782-7806.