BID PROPOSAL INSTRUCTIONS

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

PREQUALIFICATION

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

WHO CAN BID ?

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

REQUESTS FOR AUTHORIZATION TO BID

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

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?

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

ABOUT AUTHORIZATION TO BID

Firms that have not received an Authorization to Bid or Not For Bid Report within a reasonable time of complete and correct original document submittal should contact the Department as to the status. Firms unsure as to authorization status should call the Prequalification Section of the Bureau of Construction at the number listed at the end of these instructions.

ADDENDA AND REVISIONS

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

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

The Internet is the Department's primary way of doing business. The subscription service emails are an added courtesy the Department provides. It is suggested that bidders check IDOT's website at http://www.idot.illinois.gov/doing-business/procurements/construction-services/construction-bulletins/transportation-bulletin/index#TransportationBulletin before submitting final bid information.

IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.

Addenda questions may be directed to the Contracts Office at (217)782-7806 or DOT.D&Econtracts@illlinois.gov

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

STANDARD GUIDELINES FOR SUBMITTING BIDS

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

BID SUBMITTAL CHECKLIST

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

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

☐ **After page 4 –** Insert the following documents: The I**llinois Office Affidavit** (Not applicable to federally funded projects) followed by Cost Adjustments for Steel, Bituminous and Fuel (if applicable) and the Contractor Letter of Assent (if applicable). The general rule should be, if you don't know where it goes, put it after page 4.

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

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

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

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

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

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

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

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

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

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

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

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

QUESTIONS: pre-letting up to execution of the contract

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

QUESTIONS: following contract execution

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

RETURN WITH BID

2

Proposal Submitted By Name
Address
City

Letting January 30, 2015

NOTICE TO PROSPECTIVE BIDDERS
This proposal can be used for bidding purposes by only those companies that request and receive written AUTHORIZATION TO BID from IDOT's Central Bureau of Construction.
BIDDERS NEED NOT RETURN THE ENTIRE PROPOSAL

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

Springfield, Illinois 62764

Contract No. 60L70
COOK County
Section 2010-080-B
Route FAI 55
Project ACNHPP-0055(410)
District 1 Construction Funds

PLEASE MARK THE APPROPRIATE BOX BELOW:

☐ A Bid Bond is included.

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

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

Prepared by

Checked by F

(Printed by authority of the State of Illinois)

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RETURN WITH BID

Illinois Department of Transportation

PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

1. Proposal of _____

   _____

   Taxpayer Identification Number (Mandatory) _____

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

   Contract No. 60L70
   COOK County
   Section 2010-080-B
   Project ACNHPP-0055(410)
   Route FAI 55
   District 1 Construction Funds

   Reconstruction of I-55 (Stevenson Expressway) and US 41 (Lake Shore Drive) interchange outbound structures, new retaining walls, lighting, approach roadway reconstruction and other related work, located in Chicago.

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

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

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

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

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

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

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

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

Attach Cashier's Check or Certified Check Here

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

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

Item _____

Section No. _____

County _____

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

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

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

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

Schedule of Combination Bids

Combination No.	Sections Included in Combination	Combination Bid Dollars	Cents

7. **SCHEDULE OF PRICES.** The undersigned bidder submits herewith, in accordance with the rules and instructions, a schedule of prices for the items of work for which bids are sought. The unit prices bid are in U.S. dollars and cents, and all extensions and summations have been made. The bidder understands that the quantities appearing in the bid schedule are approximate and are provided for the purpose of obtaining a gross sum for the comparison of bids. If there is an error in the extension of the unit prices, the unit prices will govern. Payment to the contractor awarded the contract will be made only for actual quantities of work performed and accepted or materials furnished according to the contract. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased or omitted as provided elsewhere in the contract.

8. **AUTHORITY TO DO BUSINESS IN ILLINOIS.** Section 20-43 of the Illinois Procurement Code (the Code) (30 ILCS 500/20-43) provides that a person (other than an individual acting as a sole proprietor) must be a legal entity authorized to transact business or conduct affairs in the State of Illinois prior to submitting the bid.

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

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

Check box Yes ☐
Check box No ☐

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

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 60L70

State Job # - C-91-002-11

Project Number ACNHPP-0055/410/

Route FAI 55

County Name - COOK- -
Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
K1005863	TREE ROOT PRUNING	EACH	60.000				
X0322141	REM TEMP WOOD POLE	EACH	2.000				
X0322441	DIG LOOP DET SEN U 4C	EACH	7.000				
X0322442	TONE EQ 3 FRE REC PRG	EACH	21.000				
X0322443	TONE EQ 3 FREQ TR PRG	EACH	21.000				
X0322444	TONE EQ POWER SUPPLY	EACH	10.000				
X0322445	TONE EQ MOUNT FRAME	EACH	5.000				
X0322446	CAB HOUSING EQU TY 3	EACH	5.000				
X0323898	CCTV DOME CAMERA	EACH	2.000				
X0324181	DISCON SN LTG/RM WIRE	EACH	2.000				
X0324597	CCTV CABINET	EACH	2.000				
X0324599	ROD AND CLEAN EX COND	FOOT	2,206.000				
X0325003	REM EX VALVE & VAULT	EACH	4.000				
X0325155	REM ABANDON GAS MAIN	FOOT	10.000				
X0325207	TV INSPECT OF SEWER	FOOT	4,780.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 60L70

State Job # - C-91-002-11

Project Number	Route
ACNHPP-0055/410/	FAI 55

County Name - COOK- -
Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0325318	LT WT CELL CONC FILL	CU YD	22,608.000				
X0325349	TEMP CON BAR (PERM)	FOOT	67.000				
X0325734	SLOTTED DRAIN REMOVAL	FOOT	96.000				
X0325815	REMOVE EXISTING CABLE	FOOT	5,786.000				
X0326461	CCTV EQPT FBR OPT DST	EACH	2.000				
X0326935	CROSSHOLE SONIC LOG	EACH	23.000				
X0326952	STEP-DOWN TRANSFORMER	EACH	1.000				
X0327004	TEMP WP 60 CL 4	EACH	1.000				
X0327350	TEMP WP 50 CL4 15 MA	EACH	16.000				
X0327561	BUDG ALLOW CCTV INTGR	L SUM	1.000				
X0327602	CCTV CAM STR GS 80 MH	EACH	1.000				
X0327606	FIBER OPT SPL-LATERAL	EACH	2.000				
X0327616	MAINT ITS DURG CONSTR	CAL MO	21.000				
X0327682	CDWM ENG SERVICES	L SUM	1.000				
X0327683	CCTV CAM STR GS 100MH	EACH	1.000				

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Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Project Number
ACNHPP-0055/410/

Route
FAI 55

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X0370003	ECC TRPX2-1C6 1C8CDOT	FOOT	41.000				
X0370049	UGRD C PVC2SCH80 CDOT	FOOT	973.000				
X0370068	CF24 1.25A15B CDOT	EACH	18.000				
X0370074	RACKING CBL MH/HHCDOT	EACH	10.000				
X0370084	DRILL MNHL/HNDHL CDOT	EACH	11.000				
X0370085	CLN MNHL/HNDHL (CDOT)	EACH	8.000				
X0370139	MAINT LIGHT SYS CDOT	CAL MO	21.000				
X0370186	EL MH 3X4X4 30FL CDOT	EACH	3.000				
X0370205	ECC XLP 1C500MCM CDOT	FOOT	1,625.000				
X0900007	TEMP M S EA RET WL SP	SQ FT	23,128.000				
X0900008	TEMP SHORING EX ST BN	EACH	1.000				
X0900009	TEMP SHORING SB55 VS	L SUM	1.000				
X0900010	TEMP SHORING NW VS	L SUM	1.000				
X1200007	TEMP WD POLE 80FT CL4	EACH	1.000				
X1200008	FO PATCH PANEL, 96F	EACH	2.000				

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Section Number - 2010-080-B

Project Number
ACNHPP-0055/410/

Route
FAI 55

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X1200010	REM/REPL TAP SLV 36	EACH	1.000				
X1200011	STORM SEW T2 DIP 8	FOOT	189.000				
X1200012	STORM SEW T2 DIP 10	FOOT	10.000				
X1200013	MANHOLE METRA SP	EACH	2.000				
X1400001	POWER DISTR CENTR GM	EACH	1.000				
X1400002	THERM MAG CCT BREAKER	EACH	1.000				
X1400003	TEMP WP 80 CL4 15MA	EACH	9.000				
X1400004	EC C EPR 15 1C500 MCM	FOOT	1,300.000				
X1400005	EC C EPR 15 1C1000MCM	FOOT	2,600.000				
X2020502	BRACED EXCAVATION	CU YD	87.000				
X3800001	REM EX CTNRY SUP SYS	EACH	1.000				
X3800002	CTNRY SUPPORT STR P1	EACH	1.000				
X3800003	CTNRY SUPPORT STR P2	EACH	1.000				
X3800004	CTNRY SUPPORT STR P4	EACH	1.000				
X4060110	BIT MATLS PR CT	POUND	2,299.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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Section Number - 2010-080-B

Project Number ACNHPP-0055/410/

Route FAI 55

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X4240800	DETECTABLE WARN SPL	SQ FT	12.000				
X4402020	CONC MEDIAN SURF REM	SQ FT	5,373.000				
X5012502	CONC REM SPEC	CU YD	5.000				
X5030260	BR DECK GROOVING SPL	SQ YD	19,614.000				
X5121800	PERM STEEL SHT PILING	SQ FT	6,171.000				
X5210110	HLMR BRG GUID EXP 200	EACH	56.000				
X5210120	HLMR BRG GUID EXP 250	EACH	12.000				
X5210170	HLMR BRG GUID EXP 500	EACH	18.000				
X5210190	HLMR BRG GUID EXP 600	EACH	6.000				
X5210340	HLMR BRNG FIXED 500K	EACH	12.000				
X5210345	HLMR BRNG FIXED 550K	EACH	30.000				
X5210350	HLMR BRNG FIXED 600K	EACH	18.000				
X5509900	ABANDON FILL SS	FOOT	440.000				
X5537600	SS CLEANED 8	FOOT	1,155.000				
X5537700	SS CLEANED 10	FOOT	72.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Project Number: ACNHPP-0055/410/

Route: FAI 55

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X5537800	SS CLEANED 12	FOOT	310.000				
X5537900	SS CLEANED 15	FOOT	386.000				
X5538000	SS CLEANED 18	FOOT	231.000				
X5538200	SS CLEANED 24	FOOT	380.000				
X5538400	SS CLEANED 30	FOOT	727.000				
X5538600	SS CLEANED 36	FOOT	484.000				
X5610647	PLUG WATER MAIN 8	EACH	1.000				
X5610651	ABAN EX WM FILL CLSM	FOOT	230.000				
X5610658	WATER MAIN ABANDON 8	FOOT	355.000				
X5610708	WATER MAIN REMOV 8	FOOT	15.000				
X5610712	WATER MAIN REMOV 12	FOOT	18.000				
X5610736	WATER MAIN REMOV 36	FOOT	82.000				
X6020083	INLET TA T1FOL (CHGO)	EACH	3.000				
X6020084	MANHOLE SPECIAL	EACH	1.000				
X6020293	MH TA 8D W/2 T1FCL RP	EACH	2.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 60L70

State Job # - C-91-002-11

Project Number	Route
ACNHPP-0055/410/	FAI 55

County Name - COOK- -
Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X6022505	CB TA 4D T1FOL (CHGO)	EACH	10.000				
X6050040	REMOV MANHOLES SPL	EACH	2.000				
X6050210	FILL CATCH BAS SPL	EACH	2.000				
X6370050	CONC BAR WALL SPL	FOOT	790.000				
X6431120	REM IMP ATTEN SM	EACH	1.000				
X6640200	TEMP CH LK FENCE	FOOT	4,741.000				
X6700410	ENGR FLD OFF A SPL	CAL MO	24.000				
X7010216	TRAF CONT & PROT SPL	L SUM	1.000				
X7010410	SPEED DISPLAY TRAILER	CAL MO	21.000				
X7011015	TR C-PROT EXPRESSWAYS	L SUM	1.000				
X7035104	TEMP EPOXY PVT MK L4	FOOT	24,387.000				
X7035105	TEMP EPOXY PVT MK L5	FOOT	501.000				
X7035108	TEMP EPOXY PVT MK L8	FOOT	2,623.000				
X7035112	TEMP EPOXY PVT MK L12	FOOT	247.000				
X7280105	TELES STL SIN SUP SPL	FOOT	12.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
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	Project Number	Route
County Name - COOK- -	ACNHPP-0055/410/	FAI 55

Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X7800700	PREF THPL PM SHIELD	EACH	2.000				
X8100863	INTERCEPT EX CONDUIT	EACH	7.000				
X8102845	UNDRGRD C PVC 4 S80	FOOT	130.000				
X8130112	JUNCTION BOX T J	EACH	12.000				
X8140210	HD HANDHOLE SPL	EACH	2.000				
X8211000	UNDERPASS LUM (SP)	EACH	18.000				
X8250505	LIGHT CONTROLLER SPL	EACH	1.000				
X8251388	LT CT BM 480V200D RS	EACH	1.000				
X8440120	REM RE-E EX LGT UNIT	EACH	18.000				
X8710036	FIB OPT CBL 12F SM	FOOT	4,218.000				
X8730246	ELCBL C 19, 25 PAIR	FOOT	2,483.000				
X8730249	ELCBL C 19 6/C	FOOT	422.000				
X8730312	EC C LEAD 18 4C TW SH	FOOT	6,210.000				
X8730401	ELCBL C COMM	FOOT	325.000				
X8780105	CONC FDN SPL	EACH	4.000				

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Code - 31 - -
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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
X8850109	PREF INDUCTION LOOP	FOOT	726.000				
X8950425	REMOV TRAF SURV EQUIP	L SUM	1.000				
Z0004002	BOLLARDS	EACH	12.000				
Z0010614	CLEAN EX MAN/HAND	EACH	8.000				
Z0013302	SEGMENT CONC BLK WALL	SQ FT	375.000				
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
Z0016002	DECK SLAB REP (FD-T2)	SQ YD	250.000				
Z0016200	DECK SLAB REP (PART)	SQ YD	50.000				
Z0017800	DR UTIL STR RECON SPL	EACH	1.000				
Z0018002	DRAINAGE SCUPPR DS-11	EACH	36.000				
Z0018200	DRAIN STR RECONST SPL	EACH	2.000				
Z0018800	DRAINAGE SYSTEM	L SUM	1.000				
Z0022800	FENCE REMOVAL	FOOT	322.000				
Z0030850	TEMP INFO SIGNING	SQ FT	234.000				
Z0033020	LUM SFTY CABLE ASMBLY	EACH	27.000				

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County Name - COOK- -	ACNHPP-0055/410/	FAI 55

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
Z0033028	MAINTAIN LIGHTING SYS	CAL MO	21.000				
Z0034212	MECH ST EARTH R WL SP	SQ FT	18,640.000				
Z0034390	MODULAR EXPAN JT 6	FOOT	68.000				
Z0034806	MODULAR EXP JT-SW 6	FOOT	40.000				
Z0034809	MODULAR EXP JT-SW 9	FOOT	228.000				
Z0048665	RR PROT LIABILITY INS	L SUM	1.000				
Z0050600	REM RESET ORN FENCE	FOOT	127.000				
Z0056626	STORM SEW WM REQ 48	FOOT	65.000				
Z0062456	TEMP PAVEMENT	SQ YD	1,023.000				
Z0073002	TEMP SOIL RETEN SYSTM	SQ FT	1,630.000				
Z0073100	TEMP SHORING	EACH	3.000				
Z0076600	TRAINEES	HOUR	4,000.000		0.800		3,200.000
Z0076604	TRAINEES TPG	HOUR	4,000.000		15.000		60,000.000
20100110	TREE REMOV 6-15	UNIT	659.000				
20100210	TREE REMOV OVER 15	UNIT	346.000				

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20101000	TEMPORARY FENCE	FOOT	385.000				
20101300	TREE PRUN 1-10	EACH	60.000				
20101350	TREE PRUN OVER 10	EACH	60.000				
20101700	SUPPLE WATERING	UNIT	10.000				
20200100	EARTH EXCAVATION	CU YD	7,215.000				
20800150	TRENCH BACKFILL	CU YD	4,160.000				
21101625	TOPSOIL F & P 6	SQ YD	43,659.000				
21301072	EXPLOR TRENCH 72	FOOT	50.000				
25000210	SEEDING CL 2A	ACRE	9.000				
25000400	NITROGEN FERT NUTR	POUND	812.000				
25000600	POTASSIUM FERT NUTR	POUND	812.000				
25100115	MULCH METHOD 2	ACRE	1.750				
25100135	MULCH METHOD 4	ACRE	1.000				
25100630	EROSION CONTR BLANKET	SQ YD	43,660.000				
28000250	TEMP EROS CONTR SEED	POUND	350.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
28000400	PERIMETER EROS BAR	FOOT	7,748.000				
28000510	INLET FILTERS	EACH	162.000				
30300112	AGG SUBGRADE IMPR 12	SQ YD	13,565.000				
31101200	SUB GRAN MAT B 4	SQ YD	3,195.000				
31101400	SUB GRAN MAT B 6	SQ YD	619.000				
31102100	SUB GRAN MAT C 4	SQ YD	1,286.000				
31200500	STAB SUBBASE HMA 4	SQ YD	7,746.000				
40201000	AGGREGATE-TEMP ACCESS	TON	250.000				
42000416	PCC PVT 9 3/4 JOINTD	SQ YD	6,335.000				
42000500	PCC PVT 10	SQ YD	619.000				
42001200	PAVEMENT FABRIC	SQ YD	1,043.000				
42001300	PROTECTIVE COAT	SQ YD	15,402.000				
42001420	BR APPR PVT CON (PCC)	SQ YD	1,043.000				
42400200	PC CONC SIDEWALK 5	SQ FT	15,219.000				
44000100	PAVEMENT REM	SQ YD	5,158.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
44000500	COMB CURB GUTTER REM	FOOT	4,218.000				
44000600	SIDEWALK REM	SQ FT	16,090.000				
44001980	CONC BARRIER REMOV	FOOT	467.000				
44004250	PAVED SHLD REMOVAL	SQ YD	2,017.000				
44200557	CL A PATCH T3 10	SQ YD	19.000				
44200970	CL B PATCH T2 10	SQ YD	28.000				
44201297	DOWEL BARS 1	EACH	72.000				
44201321	CL C PATCH T3 7	SQ YD	16.000				
44201335	CL C PATCH T4 8	SQ YD	148.000				
44201717	CL D PATCH T2 6	SQ YD	28.000				
44201721	CL D PATCH T3 6	SQ YD	63.000				
44201723	CL D PATCH T4 6	SQ YD	3,431.000				
44201757	CL D PATCH T3 9	SQ YD	21.000				
44201759	CL D PATCH T4 9	SQ YD	525.000				
44213000	PATCH REINFORCEMENT	SQ YD	19.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
44213200	SAW CUTS	FOOT	180.000				
44213204	TIE BARS 3/4	EACH	34.000				
48300415	PCC SHOULDERS 9 3/4	SQ YD	1,369.000				
50100300	REM EXIST STRUCT N1	EACH	1.000				
50100400	REM EXIST STRUCT N2	EACH	1.000				
50100500	REM EXIST STRUCT N3	EACH	1.000				
50157300	PROTECTIVE SHIELD	SQ YD	1,282.000				
50200100	STRUCTURE EXCAVATION	CU YD	9,574.000				
50200450	REM/DISP UNS MATL-STR	CU YD	50.000				
50300225	CONC STRUCT	CU YD	3,200.900				
50300254	RUBBED FINISH	SQ FT	12,532.000				
50300255	CONC SUP-STR	CU YD	7,346.500				
50300285	FORM LINER TEX SURF	SQ FT	8,163.000				
50300300	PROTECTIVE COAT	SQ YD	25,161.000				
50500105	F & E STRUCT STEEL	L SUM	1.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
50500505	STUD SHEAR CONNECTORS	EACH	63,216.000				
50800105	REINFORCEMENT BARS	POUND	834,320.000				
50800205	REINF BARS, EPOXY CTD	POUND	2,616,250.000				
50800515	BAR SPLICERS	EACH	7,223.000				
50800530	MECHANICAL SPLICERS	EACH	2,457.000				
51500100	NAME PLATES	EACH	6.000				
51603000	DRILLED SHAFT IN SOIL	CU YD	3,185.100				
51604000	DRILLED SHAFT IN ROCK	CU YD	164.900				
52000110	PREF JT STRIP SEAL	FOOT	84.000				
52100020	ELAST BEARING ASSY T2	EACH	12.000				
52100030	ELAST BEARING ASSY T3	EACH	18.000				
52100510	ANCHOR BOLTS 3/4	EACH	284.000				
52100520	ANCHOR BOLTS 1	EACH	120.000				
52100530	ANCHOR BOLTS 1 1/4	EACH	360.000				
52100540	ANCHOR BOLTS 1 1/2	EACH	72.000				

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550A0340	STORM SEW CL A 2 12	FOOT	861.000				
550A0360	STORM SEW CL A 2 15	FOOT	927.000				
550A0380	STORM SEW CL A 2 18	FOOT	179.000				
550A0410	STORM SEW CL A 2 24	FOOT	778.000				
550A0480	STORM SEW CL A 2 48	FOOT	98.000				
550A0660	STORM SEW CL A 3 15	FOOT	260.000				
550A0680	STORM SEW CL A 3 18	FOOT	16.000				
550A0710	STORM SEW CL A 3 24	FOOT	10.000				
550A1050	STORM SEW CL A 4 36	FOOT	33.000				
550A1620	STORM SEW CL A 6 36	FOOT	190.000				
550A1920	STORM SEW CL A 7 36	FOOT	347.000				
55100300	STORM SEWER REM 8	FOOT	181.000				
55100400	STORM SEWER REM 10	FOOT	109.000				
55100500	STORM SEWER REM 12	FOOT	1,075.000				
55100900	STORM SEWER REM 18	FOOT	102.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
55101200	STORM SEWER REM 24	FOOT	66.000				
55101600	STORM SEWER REM 36	FOOT	71.000				
56103900	D I WATER MAIN MJ 8	FOOT	145.000				
56104100	D I WATER MAIN MJ 12	FOOT	22.000				
56104325	DI WATER MAIN MJ 24	FOOT	330.000				
56105000	WATER VALVES 8	EACH	2.000				
56105200	WATER VALVES 12	EACH	1.000				
56105795	BUTTERFLY VALVES 36	EACH	2.000				
56109208	TAP VALVE & SLEEVE 36	EACH	1.000				
56400500	FIRE HYDNTS TO BE REM	EACH	2.000				
56400600	FIRE HYDRANTS	EACH	1.000				
58700300	CONCRETE SEALER	SQ FT	50,084.000				
60107700	PIPE UNDERDRAINS 6	FOOT	1,048.000				
60108200	PIPE UNDERDRAIN 6 SP	FOOT	170.000				
60200105	CB TA 4 DIA T1F OL	EACH	11.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
60200205	CB TA 4 DIA T1F CL	EACH	5.000				
60200805	CB TA 4 DIA T8G	EACH	2.000				
60201205	CB TA 4 DIA T12F&G	EACH	1.000				
60201310	CB TA 4 DIA T20F&G	EACH	9.000				
60201340	CB TA 4 DIA T24F&G	EACH	3.000				
60206905	CB TC T1F OL	EACH	1.000				
60218400	MAN TA 4 DIA T1F CL	EACH	13.000				
60221100	MAN TA 5 DIA T1F CL	EACH	5.000				
60223800	MAN TA 6 DIA T1F CL	EACH	2.000				
60224469	MAN TA 9 DIA T1F CL	EACH	1.000				
60234200	INLETS TA T1F OL	EACH	2.000				
60237470	INLETS TA T24F&G	EACH	1.000				
60250200	CB ADJUST	EACH	16.000				
60252800	CB RECONST	EACH	10.000				
60255500	MAN ADJUST	EACH	3.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
60257900	MAN RECONST	EACH	6.000				
60500040	REMOV MANHOLES	EACH	7.000				
60500050	REMOV CATCH BAS	EACH	26.000				
60500205	FILL CATCH BAS	EACH	4.000				
60500405	FILL VALVE VLTS	EACH	2.000				
60602800	CONC GUTTER TB	FOOT	267.000				
60603800	COMB CC&G TB6.12	FOOT	915.000				
60605000	COMB CC&G TB6.24	FOOT	2,190.000				
60618320	CONC MEDIAN SURF 6	SQ FT	7,330.000				
63000001	SPBGR TY A 6FT POSTS	FOOT	275.000				
63100045	TRAF BAR TERM T2	EACH	3.000				
63100085	TRAF BAR TERM T6	EACH	3.000				
63100167	TR BAR TRM T1 SPL TAN	EACH	6.000				
63200310	GUARDRAIL REMOV	FOOT	660.000				
63700175	CONC BAR 1F 42HT	FOOT	365.000				

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63700275	CONC BAR 2F 42HT	FOOT	105.000				
63700805	CONC BAR TRANS	FOOT	25.000				
63700900	CONC BARRIER BASE	FOOT	495.000				
64300770	IMP ATTEN SU NAR TL3	EACH	1.000				
66400305	CH LK FENCE 6	FOOT	272.000				
66407600	CH LK GATES 6X12 DBL	EACH	1.000				
66408200	CH LK GATES 6X24 DBL	EACH	1.000				
66900200	NON SPL WASTE DISPOSL	CU YD	9,700.000				
66900210	HAZARD WASTE DISPOSAL	CU YD	120.000				
66900450	SPL WASTE PLNS/REPORT	L SUM	1.000				
66900530	SOIL DISPOSAL ANALY	EACH	5.000				
66901000	BACKFILL PLUGS	CU YD	400.000				
67100100	MOBILIZATION	L SUM	1.000				
67201100	SEAL ABAN MONIT WELLS	EACH	1.000				
70106800	CHANGEABLE MESSAGE SN	CAL MO	36.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
70107006	PAVT MK BLKOUT TAPE 6	FOOT	17,668.000				
70107008	PAVT MK BLKOUT TAPE 8	FOOT	89.000				
70300100	SHORT TERM PAVT MKING	FOOT	46,151.000				
70300240	TEMP PVT MK LINE 6	FOOT	9,455.000				
70300520	PAVT MARK TAPE T3 4	FOOT	24,111.000				
70300530	PAVT MARK TAPE T3 5	FOOT	3,079.000				
70300550	PAVT MARK TAPE T3 8	FOOT	14,455.000				
70300560	PAVT MARK TAPE T3 12	FOOT	1,481.000				
70301000	WORK ZONE PAVT MK REM	SQ FT	19,443.000				
70400100	TEMP CONC BARRIER	FOOT	11,096.000				
70400200	REL TEMP CONC BARRIER	FOOT	13,106.000				
70600260	IMP ATTN TEMP FRN TL3	EACH	6.000				
70600270	IMP ATTN TEMP FRW TL3	EACH	1.000				
70600332	IMP ATTN REL FRN TL3	EACH	12.000				
72000100	SIGN PANEL T1	SQ FT	110.000				

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72000200	SIGN PANEL T2	SQ FT	32.000				
72000300	SIGN PANEL T3	SQ FT	1,395.500				
72100100	SIGN PANEL OVERLAY	SQ FT	91.000				
72400100	REMOV SIN PAN ASSY TA	EACH	18.000				
72400200	REMOV SIN PAN ASSY TB	EACH	12.000				
72400730	RELOC SIGN PANEL T3	SQ FT	155.500				
72600100	MILEPOST MKR ASSEMBLY	EACH	5.000				
72900100	METAL POST TY A	FOOT	12.000				
72900200	METAL POST TY B	FOOT	68.000				
73000100	WOOD SIN SUPPORT	FOOT	187.000				
73300100	OVHD SIN STR-SPAN T1A	FOOT	72.000				
73302110	OSS CANT 1CA 2-0X4-6	FOOT	22.000				
73302170	OSS CANT 2CA 3-0X5-6	FOOT	58.000				
73302210	OSS CANT 3CA 3-0X7-0	FOOT	39.000				
73400200	DRILL SHAFT CONC FDN	CU YD	48.600				

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73600100	REMOV OH SIN STR-SPAN	EACH	1.000				
73600200	REMOV OH SIN STR-CANT	EACH	2.000				
73700200	REM CONC FDN-GR MT	EACH	1.000				
73700300	REM CONC FDN-OVHD	EACH	5.000				
78000100	THPL PVT MK LTR & SYM	SQ FT	78.000				
78000200	THPL PVT MK LINE 4	FOOT	562.000				
78000400	THPL PVT MK LINE 6	FOOT	2,084.000				
78000600	THPL PVT MK LINE 12	FOOT	86.000				
78000650	THPL PVT MK LINE 24	FOOT	65.000				
78008200	POLYUREA PM T1 LTR-SY	SQ FT	260.000				
78008210	POLYUREA PM T1 LN 4	FOOT	11,194.000				
78008220	POLYUREA PM T1 LN 5	FOOT	3,437.000				
78008240	POLYUREA PM T1 LN 8	FOOT	10,253.000				
78008250	POLYUREA PM T1 LN 12	FOOT	1,023.000				
78100100	RAISED REFL PAVT MKR	EACH	409.000				

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78100105	RAISED REF PVT MKR BR	EACH	135.000				
78200410	GUARDRAIL MKR TYPE A	EACH	11.000				
78200530	BAR WALL MKR TYPE C	EACH	936.000				
78201000	TERMINAL MARKER - DA	EACH	6.000				
78300100	PAVT MARKING REMOVAL	SQ FT	6,146.000				
78300200	RAISED REF PVT MK REM	EACH	400.000				
80400100	ELECT SERV INSTALL	EACH	2.000				
80400200	ELECT UTIL SERV CONN	L SUM	1.000				
81026310	CON ENC RC 6 PVC 4X2	FOOT	220.000				
81028170	UNDRGRD C GALVS 1	FOOT	95.000				
81028200	UNDRGRD C GALVS 2	FOOT	918.000				
81028220	UNDRGRD C GALVS 3	FOOT	1,182.000				
81028240	UNDRGRD C GALVS 4	FOOT	277.000				
81028390	UNDRGRD C PVC 4	FOOT	215.000				
81028730	UNDRGRD C CNC 1 1/4	FOOT	43.000				

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81100320	CON AT ST 1 PVC GS	FOOT	878.000				
81100605	CON AT ST 2 PVC GALVS	FOOT	1,767.000				
81100805	CON AT ST 3 PVC GALVS	FOOT	179.000				
81101205	CON AT ST 6 PVC GALVS	FOOT	270.000				
81200230	CON EMB STR 2 PVC	FOOT	16,174.000				
81300220	JUN BX SS AS 6X6X4	EACH	5.000				
81300530	JUN BX SS AS 12X10X6	EACH	24.000				
81300830	JUN BX SS AS 18X18X8	EACH	26.000				
81400200	HD HANDHOLE	EACH	14.000				
81400720	DBL HANDHOLE PCC	EACH	1.000				
81603030	UD 2#4 #6G XLPUSE 1	FOOT	874.000				
81603070	UD 2#2#4GXLPUSE 1 1/4	FOOT	125.000				
81603081	UD 3#2#4GXLPUSE 1.5 P	FOOT	1,164.000				
81702110	EC C XLP USE 1C 10	FOOT	3,837.000				
81702120	EC C XLP USE 1C 8	FOOT	1,739.000				

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District - 1 - -
Section Number - 2010-080-B

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
81702130	EC C XLP USE 1C 6	FOOT	8,155.000				
81702140	EC C XLP USE 1C 4	FOOT	12,018.000				
81702150	EC C XLP USE 1C 2	FOOT	21,812.000				
81702220	EC C XLP USE 1C 350	FOOT	165.000				
81702230	EC C XLP USE 1C 500	FOOT	861.000				
81800190	A CBL 2-1C2 MESS WIRE	FOOT	45.000				
81800200	A CBL 2-1C4 MESS WIRE	FOOT	666.000				
81800300	A CBL 3-1C2 MESS WIRE	FOOT	3,250.000				
81800340	A CBL 3-1C8 MESS WIRE	FOOT	68.000				
82102400	LUM SV HOR MT 400W	EACH	52.000				
82107200	UNDERPAS LUM 100W HPS	EACH	4.000				
83050715	LT P A 47.5MH 6DA	EACH	24.000				
83050805	LT P A 47.5MH 12DA	EACH	3.000				
83600200	LIGHT POLE FDN 24D	FOOT	39.000				
83800205	BKWY DEV TR B 15BC	EACH	3.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 60L70

State Job # - C-91-002-11

	Project Number	Route
County Name - COOK- -	ACNHPP-0055/410/	FAI 55

Code - 31 - -
District - 1 - -
Section Number - 2010-080-B

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
84100110	REM TEMP LIGHT UNIT	EACH	19.000				
84200500	REM LT UNIT SALV	EACH	74.000				
84200600	REM LT U NO SALV	EACH	6.000				
84200804	REM POLE FDN	EACH	29.000				
84400105	RELOC EX LT UNIT	EACH	6.000				
84500110	REMOV LIGHTING CONTR	EACH	1.000				
84500120	REMOV ELECT SERV INST	EACH	3.000				
84500130	REMOV LTG CONTR FDN	EACH	1.000				
87000885	ECA C XLPTC 2C 6 8	FOOT	1,190.000				
87301305	ELCBL C LEAD 14 1PR	FOOT	121.000				
87301900	ELCBL C EGRDC 6 1C	FOOT	76.000				
87800200	CONC FDN TY D	FOOT	25.000				
87900100	DRILL EX FOUNDATION	EACH	2.000				
87900200	DRILL EX HANDHOLE	EACH	4.000				
89500510	CAB HOUSING EQU REMOV	EACH	4.000				

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 60L70

State Job # - C-91-002-11

		Project Number	Route
County Name -	COOK- -	ACNHPP-0055/410/	FAI 55
Code -	31 - -		
District -	1 - -		
Section Number -	2010-080-B		

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
89502300	REM ELCBL FR CON	FOOT	1,231.000				
89502350	REM & RE ELCBL FR CON	FOOT	1,632.000				
89502385	REMOV EX CONC FDN	EACH	4.000				
89502400	REM EX FB INSTAL COMP	EACH	1.000				

CONTRACT NUMBER **60L70**

THIS IS THE TOTAL BID **$** _____

NOTES:

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

RETURN WITH BID

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

I. GENERAL

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

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

C. In addition to all other remedies provided by law, failure to comply with any assurance, failure to make any disclosure or the making of a false certification shall be grounds for the CPO to void the contract, and may result in the suspension or debarment of the bidder or subcontractor. If a false certification is made by a subcontractor the contractor's submitted bid and the executed contract may not be declared void unless the contractor refuses to terminate the subcontract upon the State's request after a finding that the subcontractor's certification was false.

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

II. ASSURANCES

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

A. Conflicts of Interest

Section 50-13. Conflicts of Interest.

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

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

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

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

(e) Prior interests. This Section does not affect the validity of any contract made between the State and an officer or employee of the State or member of the General Assembly, his or her spouse, minor child or any combination of those persons if that contract was in existence before his or her election or employment as an officer, member, or employee. The contract is voidable, however, if it cannot be completed within 365 calendar days after the officer, member, or employee takes office or is employed. The current salary of the Governor is $177,412.00. Sixty percent of the salary is $106,447.20.

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

B. Negotiations

Section 50-15. Negotiations.

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

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

C. Inducements

Section 50-25. Inducement.

Any person who offers or pays any money or other valuable thing to any person to induce him or her not to provide a submission to a vendor portal or to bid for a State contract or as recompense for not having bid on a State contract is guilty of a Class 4 felony. Any person who accepts any money or other valuable thing for not bidding for a State contract, not making a submission to a vendor portal, or who withholds a bid or submission to a vendor portal in consideration of the promise for the payment of money or other valuable thing is guilty of a Class 4 felony.

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

D. Revolving Door Prohibition

Section 50-30. Revolving door prohibition.

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

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

E. Reporting Anticompetitive Practices

Section 50-40. Reporting anticompetitive practices.

When, for any reason, any vendor, bidder, contractor, CPO, SPO, designee, elected official, or State employee suspects collusion or other anticompetitive practice among any bidders, offerors, contractors, proposers, or employees of the State, a notice of the relevant facts shall be transmitted to the Attorney General and the CPO.

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

F. Confidentiality

Section 50-45. Confidentiality.

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

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

G. Insider Information

Section 50-50. Insider information.

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

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

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

III. CERTIFICATIONS

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

A. Bribery

Section 50-5. Bribery.

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

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

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

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

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

(2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 2012.

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

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

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

B. Felons

Section 50-10. Felons.

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

(b) Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Code and every vendor's submission to a vendor portal shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO may declare the related contract void if any of the certifications required by this Section are false.

C. Debt Delinquency

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

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

D. Prohibited Bidders, Contractors and Subcontractors

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

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

E. Section 42 of the Environmental Protection Act

Section 50-14 Environmental Protection Act violations.

The bidder or contractor or subcontractor, respectively, certifies in accordance with Section 50-14 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the CPO may declare the contract void if this certification is false.

F. Educational Loan

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

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

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

G. Bid-Rigging/Bid Rotating

Section 33E-11 of the Criminal Code of 2012, 720 ILCS 5/3BE-11.

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

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

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

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

H. International Anti-Boycott

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

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

I. Drug Free Workplace

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

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

J. Disclosure of Business Operations in Iran

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

(1) More than 10% of the Company's revenues produced in or assets located in Iran involve oil-related activities or mineral-extraction activities; less than 75% of the Company's revenues produced in or assets located in Iran involve contracts with or provision of oil-related or mineral-extraction products or services to the Government of Iran or a project or consortium created exclusively by that government; and the Company has failed to take substantial action.

(2) The Company has, on or after August 5, 1996, made an investment of $20 million or more, or any combination of investments of at least $10 million each that in the aggregate equals or exceeds $20 million in any 12-month period, which directly or significantly contributes to the enhancement of Iran's ability to develop petroleum resources of Iran.

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

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

Check the appropriate statement:

/___/ Company has no business operations in Iran to disclose.

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

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

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

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

_____**NA-FEDERAL**_____

_____

_____

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

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

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

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

The undersigned bidder certifies that it has registered as a business with the State Board of Elections and acknowledges a continuing duty to update the registration in accordance with the above referenced statutes. If the business entity is required to register, the CPO shall verify that it is in compliance on the date the bid or proposal is due. The CPO shall not accept a bid or proposal if the business entity is not in compliance with the registration requirements.

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

M. Lobbyist Disclosure

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

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

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

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

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

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

Or

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

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

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

IV. DISCLOSURES

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

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

B. Financial Interests and Conflicts of Interest

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

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the bidding entity or its parent entity, whichever is less, unless the contractor or bidder is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each individual making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each individual making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.
The current annual salary of the Governor is $177,412.00.

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

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

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the bidder is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on Form A must be signed and dated by an individual that is authorized to execute contracts for the bidding company. Note: These questions are for assistance only and are not required to be completed.

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

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

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

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

RETURN WITH BID

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

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

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

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

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

RETURN WITH BID

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A
Financial Information & Potential Conflicts of Interest Disclosure

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

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

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

DISCLOSURE OF FINANCIAL INFORMATION

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

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

stock _____ sole proprietorship _____ Partnership _____ other: (explain on separate sheet):

% or $ value of ownership/distributable income share: _____

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

(a) State employment, currently or in the previous 3 years, including contractual employment of services.
Yes ___No __

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

1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___No __

2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor provide the name the State agency for which you are employed and your annual salary. _____
_____

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

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

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

Yes ___No __

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

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

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

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 71/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess 100% of the annual salary of the Governor? Yes ___ No __

4. If your spouse or any minor children are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you and your spouse or 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 two times the salary of the Governor?

Yes ___ No __

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

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

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

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

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

(h) Relationship to anyone who is or was a registered lobbyist in the previous 2 years; spouse, father, mother, son, or daughter. Yes ___No __

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

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

---

3. Communication Disclosure.

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

Name and address of person(s): _____

_____

_____

_____

RETURN WITH BID

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

Name of person(s): _____

Nature of disclosure: _____
_____
_____
_____

APPLICABLE STATEMENT

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

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

NOT APPLICABLE STATEMENT

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

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

☐ _____ _____
Signature of Authorized Representative Date

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

RETURN WITH BID

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Other Contracts & Financial Related Information Disclosure

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

Disclosure of the information contained in this Form is required by Section 50-35 of the Code (30 ILCS 500). This information shall become part of the publicly available contract file. This Form B must be completed for all bids.

DISCLOSURE OF OTHER CONTRACTS AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The BIDDER shall identify whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No __
If "No" is checked, the bidder only needs to complete the signature box on this page.

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

THE FOLLOWING STATEMENT MUST BE CHECKED

☐ _____ _____
Signature of Authorized Representative Date

OWNERSHIP CERTIFICATION

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

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

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

RETURN WITH BID

SPECIAL NOTICE TO CONTRACTORS

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

CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION

(a) All bidders on construction contracts shall complete and submit, along with and as part of their bids, a Bidder's Employee Utilization Form (Form BC-1256) setting forth a projection and breakdown of the total workforce intended to be hired and/or allocated to such contract work by the bidder including a projection of minority and female employee utilization in all job classifications on the contract project.

(b) The Department of Transportation shall review the Employee Utilization Form, and workforce projections contained therein, of the contract awardee to determine if such projections reflect an underutilization of minority persons and/or women in any job classification in accordance with the Equal Employment Opportunity Clause and Title 44, Illinois Administrative Code, Section 750.120. If it is determined that the contract awardee's projections reflect an underutilization of minority persons and/or women in any job classification, it shall be advised in writing of the manner in which it is underutilizing and such awardee shall be considered to be in breach of the contract unless, prior to commencement of work on the contract project, it submits revised satisfactory projections or an acceptable written affirmative action plan to correct such underutilization including a specific timetable geared to the completion stages of the contract.

(c) The Department of Transportation shall provide to the Department of Human Rights a copy of the contract awardee's Employee Utilization Form, a copy of any required written affirmative action plan, and any written correspondence related thereto. The Department of Human Rights may review and revise any action taken by the Department of Transportation with respect to these requirements.

RETURN WITH BID

Illinois Department of Transportation

Contract No. 60L70
COOK County
Section 2010-080-B
Project ACNHPP-0055(410)
Route FAI 55
District 1 Construction Funds

PART I. IDENTIFICATION

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

Name of Bidder: _____

PART II. WORKFORCE PROJECTION

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

TABLE A

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

TABLE C

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

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

FOR DEPARTMENT USE ONLY

BC 1256 (Rev. 12/11/07)

Note: See instructions on page 2

PART II. WORKFORCE PROJECTION - continued

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

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

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

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

PART III. AFFIRMATIVE ACTION PLAN

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

B. The undersigned bidder understands and agrees that the minority and female employee utilization projection submitted herein, and the goals and timetable included under an Affirmative Action Plan if required, are deemed to be part of the contract specifications.

Company _____ Telephone Number _____

_____

Address _____

NOTICE REGARDING SIGNATURE

The Bidder's signature on the Proposal Signature Sheet will constitute the signing of this form. The following signature block needs to be completed 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. 60L70
COOK County
Section 2010-080-B
Project ACNHPP-0055(410)
Route FAI 55
District 1 Construction Funds

PROPOSAL SIGNATURE SHEET

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

Firm Name _____

(IF AN INDIVIDUAL) Signature of Owner _____

Business Address _____

_____

Firm Name _____

By _____

(IF A CO-PARTNERSHIP) Business Address _____

_____

Name and Address of All Members of the Firm:

_____ _____

Corporate Name _____

By _____
Signature of Authorized Representative

(IF A CORPORATION)

_____
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 _____

Corporate Name _____

By _____
Signature of Authorized Representative

(IF A JOINT VENTURE)

_____
Typed or printed name and title of Authorized Representative

Attest _____
Signature

Business Address _____

_____

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

Illinois Department of Transportation

Return with Bid

Division of Highways
Annual Proposal Bid Bond

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

KNOW ALL PERSONS BY THESE PRESENTS, That We _____

as PRINCIPAL, and _____

as SURETY, and held jointly, severally and firmly bound unto the STATE OF ILLINOIS in the penal sum of 5 percent of the total bid price, or for the amount specified in the bid proposal under "Proposal Guaranty" in effect on the date of the Invitation for Bids, whichever is the lesser sum, well and truly to be paid unto said STATE OF ILLINOIS, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH that whereas, the PRINCIPAL may submit bid proposal(s) to the STATE OF ILLINOIS, acting through the Department of Transportation, for various improvements published in the Transportation Bulletin during the effective term indicated above.

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

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

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

_____
(Company Name)

By _____
(Signature and Title)

Notary for PRINCIPAL

STATE OF _____
COUNTY OF _____

Signed and attested before me on _____ (date)

by _____
(Name of Notary Public)

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

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

_____
(Company Name)

By _____
(Signature of Attorney-in-Fact)

Notary for SURETY

STATE OF _____
COUNTY OF _____

Signed and attested before me on _____ (date)

by _____
(Name of Notary Public)

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In lieu of completing the above section of the Annual Proposal Bid Bond form, the Principal may file an Electronic Bid Bond. By signing the proposal(s) the Principal is ensuring the identified electronic bid bond has been executed and the Principal and Surety are firmly bound unto the State of Illinois under the conditions of the bid bond as shown above.

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

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

Illinois Department of Transportation

Return with Bid

Division of Highways Proposal Bid Bond

Item No. _____

Letting Date _____

KNOW ALL PERSONS BY THESE PRESENTS, That We _____

as PRINCIPAL, and _____

as SURETY, and held jointly, severally and firmly bound unto the STATE OF ILLINOIS in the penal sum of 5 percent of the total bid price, or for the amount specified in the bid proposal under "Proposal Guaranty" in effect on the date of the Invitation for Bids, whichever is the lesser sum, well and truly to be paid unto said STATE OF ILLINOIS, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns.

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

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

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

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

_____
(Company Name)

By _____
(Signature and Title)

Notary for PRINCIPAL

STATE OF _____
COUNTY OF _____

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

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

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

_____
(Company Name)

By _____
(Signature of Attorney-in-Fact)

Notary for SURETY

STATE OF _____
COUNTY OF _____

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

(Seal)

_____
(Signature of Notary Public)

_____
(Date Commission Expires)

In lieu of completing the above section of the Proposal Bid Bond form, the Principal may file an Electronic Bid Bond. By signing the proposal the Principal is ensuring the identified electronic bid bond has been executed and the Principal and Surety are firmly bound unto the State of Illinois under the conditions of the bid bond as shown above.

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

Illinois Department of Transportation

DBE Utilization Plan

(1) Policy

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

(2) Obligation

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

(3) Project and Bid Identification

Complete the following information concerning the project and bid:

Route _____ Total Bid _____

Section _____ Contract DBE Goal _____ (Percent) _____ (Dollar Amount)

Project _____

County _____

Letting Date _____

Contract No. _____

Letting Item No. _____

(4) Assurance

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

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

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

☐ Failed to meet contract award goals and has included good faith effort documentation to meet the goals and that my company has provided participation as follows:

Disadvantaged Business Participation _____ percent

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

_____
Company

By _____

Title _____

Date _____

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

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

Bureau of Small Business Enterprises
2300 South Dirksen Parkway
Springfield, Illinois 62764

Local Let Projects
Submit forms to the
Local Agency

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

Illinois Department of Transportation

DBE Participation Statement

Subcontractor Registration Number _____ Letting _____

Participation Statement Item No. _____

(1) Instructions Contract No. _____

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

(2) Work:

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

Pay Item No.	Description	Quantity	Unit Price	Total
			Total	

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

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

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

The undersigned certify that the information included herein is true and correct, and that the DBE firm listed below has agreed to perform a commercially useful function in the work of the contract item(s) listed above and to execute a contract with the prime contractor or 1st Tier subcontractor. The undersigned further understand that no changes to this statement may be made without prior approval from the Department's Bureau of Small Business Enterprises and that complete and accurate information regarding actual work performed on this project and the payment therefore must be provided to the Department.

_____
Signature for Contractor __ 1st Tier __ 2nd Tier

Title _____

Date _____

Contact Person _____

Phone _____

Firm Name _____

Address _____

City/State/Zip _____

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

Title _____

Date _____

Contact Person _____

Phone _____

Firm Name _____

Address _____

City/State/Zip _____

E _____

WC _____

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

PROPOSAL ENVELOPE

Illinois Department of Transportation

PROPOSALS

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

Item No.	Item No.	Item No.

Submitted By:

Name:
Address:
Phone No.

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

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

NOTICE

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

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

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

Contract No. 60L70
COOK County
Section 2010-080-B
Project ACNHPP-0055(410)
Route FAI 55
District 1 Construction Funds

Illinois Department of Transportation

SUBCONTRACTOR DOCUMENTATION

Public Acts 96-0795, 96-0920, and 97-0895 enacted substantial changes to the provisions of the Code (30 ILCS 500). Among the changes are provisions affecting subcontractors. The Contractor awarded this contract will be required as a material condition of the contract to implement and enforce the contract requirements applicable to subcontractors that entered into a contractual agreement with a total value of $50,000 or more with a person or entity who has a contract subject to the Code and approved in accordance with article 108.01 of the Standard Specifications for Road and Bridge Construction.

If the Contractor seeks approval of subcontractors to perform a portion of the work, and approval is granted by the Department, the Contractor shall provide a copy of the subcontract to the Illinois Department of Transportation's CPO upon request within 15 calendar days after execution of the subcontract.

Financial disclosures required pursuant to Sec. 50-35 of the Code must be submitted for all applicable subcontractors. The subcontract shall contain the certifications required to be made by subcontractors pursuant to Article 50 of the Code. This Notice to Bidders includes a document incorporating all required subcontractor certifications and disclosures for use by the Contractor in compliance with this mandate. The document is entitled State Required Ethical Standards Governing Subcontractors.

RETURN WITH SUBCONTRACT

STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

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

The certifications hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed should the Department approve the subcontractor. The CPO may terminate or void the contract approval if it is later determined that the bidder or subcontractor rendered a false or erroneous certification. If a false certification is made by a subcontractor the contractor's submitted bid and the executed contract may not be declared void unless the contractor refuses to terminate the subcontract upon the State's request after a finding that the subcontractor's certification was false.

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

A. Bribery

Section 50-5. Bribery.

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

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

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

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

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

(2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract to which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 2012.

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

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

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

B. Felons

Section 50-10. Felons.

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

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

RETURN WITH SUBCONTRACT

C. Debt Delinquency

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

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

D. Prohibited Bidders, Contractors and Subcontractors

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

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

E. Section 42 of the Environmental Protection Act

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-14 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the CPO may declare the contract void if this certification is false.

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

_____
Name of Subcontracting Company

_____ _____
Authorized Officer Date

RETURN WITH SUBCONTRACT

SUBCONTRACTOR DISCLOSURES

I. DISCLOSURES

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

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

B. Financial Interests and Conflicts of Interest

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

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the subcontracting entity or its parent entity, whichever is less, unless the subcontractor is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each individual making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each individual making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.
The current annual salary of the Governor is $177,412.00.

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

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

C. Disclosure Form Instructions

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the subcontractor is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. If a subcontractor is not subject to Federal 10K reporting, the subcontractor must determine if any individuals are required by law to complete a financial disclosure form. To do this, the subcontractor should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on the second page of Form A must be signed and dated by an individual that is authorized to execute contracts for the subcontracting company. Note: These questions are for assistance only and are not required to be completed.

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

   (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.)
4. Does anyone in your organization receive greater than 5% of the subcontracting entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES ___ NO __

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

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

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

RETURN WITH SUBCONTRACT

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

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

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

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

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

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

Disclosure of the information contained in this Form is required by Section 50-35 of the Code (30 ILCS 500). Subcontractors desiring to enter into a subcontract of a State of Illinois contract must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for subcontracts with a total value of $50,000 or more, from subcontractors identified in Section 20-120 of the Code, and for all open-ended contracts. **A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.**

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

DISCLOSURE OF FINANCIAL INFORMATION

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

FOR INDIVIDUAL (type or print information)

NAME: _____

ADDRESS _____

_____

Type of ownership/distributable income share:

stock _____ sole proprietorship _____ Partnership _____ other: (explain on separate sheet):

% or $ value of ownership/distributable income share: _____

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

(a) State employment, currently or in the previous 3 years, including contractual employment of services.
Yes ___No __

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

1. Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority? Yes ___No __

2. Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor, provide the name the State agency for which you are employed and your annual salary. _____
_____

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

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

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

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

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

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

3. If your spouse or any minor children is/are currently appointed to or employed by any agency of the State of Illinois, and his/her annual salary exceeds 60% of the annual salary of the Governor, are you entitled to receive (i) more than 71/2% of the total distributable income of your firm, partnership, association or corporation, or (ii) an amount in excess of of 100% of the annual salary of the Governor? Yes ___No __

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

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

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

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

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

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

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

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

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

---

3 Communication Disclosure.

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

Name and address of person(s): _____

_____

_____

_____

RETURN WITH SUBCONTRACT

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

Name of person(s): _____

Nature of disclosure: _____

_____

_____

_____

APPLICABLE STATEMENT

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

Completed by: ☐ _____ _____

Signature of Individual or Authorized Officer — Date

NOT APPLICABLE STATEMENT

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

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

☐ _____ _____

Signature of Authorized Officer — Date

RETURN WITH SUBCONTRACT

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B
Subcontractor: Other Contracts & Financial Related Information Disclosure

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

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

DISCLOSURE OF OTHER CONTRACTS, SUBCONTRACTS, AND PROCUREMENT RELATED INFORMATION

1. Identifying Other Contracts & Procurement Related Information. The SUBCONTRACTOR shall identify whether it has any pending contracts, subcontracts, including leases, bids, proposals, or other ongoing procurement relationship with any other State of Illinois agency: Yes ___ No __
If "No" is checked, the subcontractor only needs to complete the signature box on this page.

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

THE FOLLOWING STATEMENT MUST BE CHECKED

☐ _____ _____
Signature of Authorized Officer Date

OWNERSHIP CERTIFICATION

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

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

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

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Sealed proposals for the improvement described herein will be received by the Department of Transportation. Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). Paper-based bids are to be submitted to the Chief Procurement Officer for the Department of Transportation in care of the Chief Contracts Official at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 a.mJanuary 30, 2015. All bids will be gathered, sorted, publicly opened and read in the auditorium at the Department of Transportation's Harry R. Hanley Building shortly after 10:00 a.m.

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

   Contract No. 60L70
   COOK County
   Section 2010-080-B
   Project ACNHPP-0055(410)
   Route FAI 55
   District 1 Construction Funds

Reconstruction of I-55 (Stevenson Expressway) and US 41 (Lake Shore Drive) interchange outbound structures, new retaining walls, lighting, approach roadway reconstruction and other related work, located in Chicago.

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

Erica J. Borggren,
Acting Secretary

INDEX
FOR
SUPPLEMENTAL SPECIFICATIONS
AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2015

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

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

SUPPLEMENTAL SPECIFICATIONS

RECURRING SPECIAL PROVISIONS

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

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STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the “Standard Specifications for Road and Bridge Construction" adopted January 1, 2012, the latest edition of the "Manual of Uniform Traffic Control Devices for Streets and Highways, 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 Sheets included herein which apply to and govern the construction of FAI Route 55 (I-55), Project ACNHPP-0055(410), Section 2010-080-B, in Cook County, Contract 60L70, 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 along FAI Route 55 (Stevenson Expressway) from just east of FAI Route I-94 (Dan Ryan Expressway) near Prairie Avenue to US 41 (Lake Shore Drive), in the City of Chicago. The gross and net length of the project is 5,869 Feet (1.112 miles).

DESCRIPTION OF PROJECT

The work consists of bridge construction and the reconfiguration of the outbound bridges of the I-55 and Lake Shore Drive Interchange to provide an additional lane along Ramp NW from Northbound Lake Shore Drive to Southbound I-55, the removal and replacement of Ramp SW from Southbound Lake Shore Drive to Southbound I-55, and the reconstruction and widening of the SB I-55 structure.

Work includes bridge construction, roadway reconstruction, retaining wall construction, bridge removal, erosion control and protection, utility and water main relocation, special waste excavation, earth excavation and embankment, new storm and combined sewers, relocation of the Metra catenary and overhead power lines, pavement construction, sidewalks, curb and gutter, pavement marking and signage, roadway lighting, ITS, concrete abutments, steel furnishing and erection, bridge deck and parapets, traffic control and protection, urban enhancements and all incidental and collateral work necessary to complete the improvements as shown on the plans and as described herein.

SOILS INFORMATION

Soil boring logs and generalized soil profiles are shown in the Plans for the I-55 and Lake Shore Drive Outbound Bridges. The reports below are available for inspection at IDOT District 1, 201 W. Center Court, Schaumburg, Illinois.

Structure Geotechnical Report
I-55 and Lake Shore Drive Interchange West Bound I-55 over I-55 Turnaround & M.L.K. Drive
S.N. 016-1501 (S.N. 016-1055)
Cook County – District 1
FAI 55: I-94 (Dan Ryan Expressway) to US 41 (Lake Shore Drive), Section 2010-080-B
Job No. D-91-002-11, Contract No. 60L70, PTB #157 – Item 3

Structure Geotechnical Report
I-55 and Lake Shore Drive Interchange
Southbound Lake Shore Drive to Westbound I-55
S.N. 016-1504 (Existing S.N. 016-1075)
Cook County – District 1
FAI 55: I-94 (Dan Ryan Expressway) to US 41 (Lake Shore Drive), Section 2010-080-B
Job No. D-91-002-11, Contract No. 60L70, PTB #157 – Item 3

Structure Geotechnical Report
I-55 and Lake Shore Drive Interchange
Northbound Lake Shore Drive to Westbound I-55 over Moe Drive & Lake Shore Drive
S.N. 016-1505 (Existing S.N. 016-1048)
Cook County – District 1
FAI 55: I-94 (Dan Ryan Expressway) to US 41 (Lake Shore Drive), Section 2010-080-B
Job No. D-91-002-11, Contract No. 60L70, PTB #157 – Item 3

Structure Geotechnical Report
I-55 and Lake Shore Drive Interchange
Southbound Lake Shore Drive to Southbound I-55 over Metra, CNRR, & Moe Drive
S.N. 016-0741
Cook County – District 1
F.A.I. Rte. 55 – Sec. 2010-080-B, Contract No. 60L70

Structure Geotechnical Report
I-55 and Lake Shore Drive Interchange
South Bound Lake Shore Drive to South Bound I-55 over Metra, CNRR, & Moe Drive
S.N. 016-0745
Cook County – District 1
F.A.I. Rte. 55 – Sec. 2010-080-B, Contract No. 60L70

Structure Geotechnical Report
I-55 and Lake Shore Drive Interchange
North Bound Lake Shore Drive to South Bound I-55 over Metra, CNRR, & Moe Drive
S.N. 016-0746
Cook County – District 1
F.A.I. Rte. 55 – Sec. 2010-080-B, Contract No. 60L70

CONTRACTOR COOPERATION

The Contractor's attention is directed to the fact that other separate contracts may be under construction during the duration of this Contract. Adjacent contracts may consist of, but are not limited to projects near:

Contract 60X07 – FAI 55 Inbound Bridges

Contract 60F63 - FAI 90/94 (Kennedy Expressway) at Ohio Street

Contract 60W26 – Harrison Street Bridge (West) at I-90/94 and Halsted Street Bridge at I-290 (Circle Interchange)

Contract 60W29 – Peoria Street Bridge at I-290 / Congress Pkwy (Circle Interchange)

Contract 60W71 – Harrison Street Bridge (East) at I-90/94 (Circle Interchange)

Contract 60W28 – Ramp NW Flyover (Circle Interchange)

Contract 60W30 – Taylor St. Bridge over I-90/94 (Circle Interchange)

Contract 60X61 – I-290 WB Mainline and Auxiliary Lanes from Peoria St. to Racine Ave. (Circle Interchange)

31st Street Bridge over Metra and CN Railroads

McCormick Place Improvement Projects including but not limited to the Convention Center/Stadium and hotel

Lucas Museum of Narrative Art

And others.

The Contractor will be governed by Article 105.08 of the Standard Specifications.

The Contractor will coordinate proposed project start dates and sequence of construction with the Engineer and other Contractors to present an effective and timely schedule for successful completion of the project.

Demolition and removal of existing Ramp NW shall be completed in advance of erection of girders for Ramp EN (Contract 60X07) in accordance with Article 105.08 of the Standard Specifications.

No additional compensation will be allowed the Contractor for the above requirements, for any delays or inconvenience resulting from the activities of other contractors.

PROGRESS SCHEDULE

Description. Time is of the essence in this Contract. It may be necessary for the Contractor to work longer hours, use additional crews, and work during weekends in order to complete the work within the required time limit. The Contractor shall submit a Critical Path Method (CPM) Progress Schedule as described below for the Engineer's approval before the work can be started.

The Contractor will not be allowed any compensation for working longer hours or using extra shifts; and working on weekends or during Holidays; working during winter months, etc. to meet the specified Completion Date.

This work shall consist of preparing, revising and updating a detailed progress scheduled based upon the Critical Path Method (CPM). This work shall also consist of performing time impact analysis of the progress schedule based upon the various revisions and updates as they occur.

Requirements. The software shall produce an electronic progress schedule for submission to the department that is 100% compatible with Primavera SureTrak 3.0 Project Manager, published by Primavera Systems, Inc.

Format. The electronic schedule format shall contain the following:

a. Project Name: (Optional).

b. Template: Construction.

c. Type: SureTrak: Native file format for stand-alone contracts.

d. Planning Unit: Days (calendar working).

e. Number/Version: Original or updated number.

f. Start Date: Not later than ten days after execution of the contract.

g. Must Finish Date: Completion date for completion date contracts.

h. Project Title: Contract number.

i. Company Name: Contractor's name.

Calendars.

a. Completion Date Contracts. The base calendar shall show the proposed working days of the week and the proposed number of work hours per day.

Schedule Development. The detailed schedule shall incorporate the entire contract time. The minimum number of activities shown on the schedule shall represent the work incorporating the pay items whose aggregate contract value constitutes 80 percent of the total contract value. These pay items shall be determined by starting with the pay item with the largest individual contract value and adding subsequent pay item contract values in descending order until 80 percent of the contract value has been attained. Any additional activities required to maintain the continuity of the schedule logic shall also be shown.

The following shall be depicted in the schedule for each activity:

a. Activity Identification (ID) Numbers. The Contract shall utilize numerical designations to identify each activity. Numbering of activities shall be in increments of not less than ten digits.

b. A description of the work represented by the activity (maximum forty-five characters). The use of descriptions referring to a percentage of a multi-element item (i.e., construct deck 50%) shall not be used. Separate activities shall be included to represent different elements of multi-element items (i.e., forms, reinforcing, concrete, etc.). Multiple activities with the same work description shall include a location as part of the description.

c. Proposed activity duration shall be shown in whole days. The Contractor shall provide production rates to justify the activity duration. Schedule duration shall be contiguous and not interruptible.

The schedule shall indicate the sequence and interdependence of activities required for the prosecution of the work. The schedule logic shall not be violated.

Activities should be broken down such that each activity encompasses a single operation or tightly-integrated operations in a single, contiguous and continuous area of the project, with no activity exceeding $200,000 without the consent of the Engineer.

Total Float shall be calculated as finish float. The schedule shall be calculated using retained logic. The Contractor shall not sequester float by calendar manipulations or extended duration. Float is not for the exclusive use or benefit of either the Department or the Contractor.

Tabular Reports.

a. The following tabular reports will be required with each schedule submission:

1. Classic Gantt

2. Pert with Time Scale

b. The heading of each tabular report shall include, but not be limited to, the project name, contract number, Contractor name, report date, data date, report title and page number.

c. Each of the tabular reports shall also contain the following minimum information for each activity.

1. Activity ID

2. Activity Description

3. Original Duration (calendar day/working day)

4. Remaining Duration (calendar day/working day)

5. Activity Description

6. Early Start Date

7. Late Start Date

8. Early Finish Date

9. Late Finish Date

10. Percent Complete

11. Total Float

12. Calendar ID

13. Work performed by DBE Subcontractors and Trainees shall be shown in the Gantt Report.

d. Reports shall be printed in color on 11 in. x 17 in. (minimum) size sheets. The Classic Gantt shall show all columns, bars, column headings at the top, time scale at the top and shall show relationships.

Submission Requirements. The initial schedule shall be submitted prior to starting work but no later than five calendar days after execution of the contract. Updated schedules shall be submitted according to Article 108.02 except that as a minimum, updated schedules will be required at the 25, 50, and 75 percent completion points of the contract.

Updating.

a. The Contractor shall not make any changes to the original duration, activity relationships, constraints, costs, add or delete activities, or alter the schedule's logic when updating the schedule.

b. The originally approved baseline CPM schedule will be designated as the "Target Schedule" and shall only be changed based on a Change Order that extends the Contract duration. All updates will be plotted against the "Target Schedule." If the Contractor believes any such changes result in an overall increase in the contract time, the Contractor will immediately submit a request for extension of time along with the changed progress schedule and a detailed justification for the time extension request in accordance with Article 108.08.

c. The updated information will include the original schedule detail and the following additional information:

1. Actual start dates

2. Actual finish dates

3. Activity percent completion

4. Remaining duration of activities in progress

5. Identified or highlighted critical activities

d. The Contractor shall submit scheduling documents in the same formats and number as indicated in this section.

e. The Engineer shall withhold progress payments if the Contractor does not submit scheduled updates as required.

f. Upon receipt of the CPM schedule update, the Engineer will review the schedule for conformance with the Contract Documents and degree of detail. The Engineer, within fourteen (14) Days after receipt of the Updated CPM Schedule and supporting documents, will approve or reject it with written comments. If the Updated CPM schedule is rejected, the Contractor must submit a Revised Updated CPM Schedule within seven (7) Days after the date of rejection.

g. The updated progress schedule must accurately represent the Project's current status.

Contractor Changes to the Schedule.

The Contractor shall comply with the following requirements regarding proposed changes to the approved baseline CPM schedule:

a. If the Contractor proposes to make any changes in the approved baseline CPM schedule, the Contractor shall notify the Engineer in writing, stating the reasons for the change, identifying each changed activity (including duration and interrelationships between activities) and providing a diskette of the proposed changed schedule. Every effort must be made by the Contractor to retain the original Activity ID numbers.

b. The Engineer has the authority to approve or disapprove the proposed change in the baseline CPM schedule and shall do so in writing within ten (10) Days after receipt to the Contractor's submission.

c. If the Engineer approves the change in the baseline. All monthly updates will be plotted against the new "Target Schedule".

d. If the Engineer approves a portion of the change to the baseline CPM schedule, the Contractor shall submit a revised CPM schedule incorporating such change(s) within ten (10) Days after approval along with a written description of the change(s) to the schedule.

Recovery Schedule.

a. The Contractor shall maintain an adequate work force and the necessary materials, supplies and equipment to meet the current approved baseline CPM schedule. In the event that the Contractor, in the judgment of the Engineer, is failing to meet the approved CPM schedule including any Contract milestones, the Contractor shall submit a recovery schedule.

b. The recovery schedule shall set forth a plan to eliminate the schedule slippage (negative float). The plan must be specific to show the methods to achieve the recovery of time, i.e. increasing manpower, working overtime, weekend work, employing multiple shifts. All costs associated with implementing the recovery schedule shall be borne by the Contractor.

c. Upon receipt of the CPM recovery schedule, the Engineer will review the schedule for conformance with the Contract Documents and degree of detail. The Engineer will approve the schedule or reject it with written comments within fourteen (14) Days of receipt of the recovery schedule and supporting documents. If the detailed CPM recovery schedule is rejected, the Contractor must submit a revised CPM recovery schedule within seven (7) Days of the date of rejection.

Revised Schedule.

The Engineer may direct the Contractor to revise the approved CPM schedule. Reasons for such direction may include, but are limited to, the following: (1) changes in the Work, (2) rephrasing of the Project or any phase, (3) a change in the duration of the Project or phase, and (4) acceleration of the Project or phase.

a. The Engineer will direct the Contractor to provide a revised CPM schedule in writing.

b. The Contractor will provide the revised CPM schedule within ten (10) Days of receipt of the Engineer's written direction.

c. The Engineer has the authority, in its sole discretion, to approve or reject the revised CPM schedule and will do so in writing within ten (10) Days after receipt of the Contractor's submission. If the Engineer approves the revised schedule, such schedule will be designated the new "Target Schedule".

The schedule shall be submitted in the Sorted by Activity Layout (SORT4). The activities on the schedule shall be plotted using early start, late start, early finish, late finish and total finish.

For every schedule submission, the Contractor shall submit to the Engineer, four Windows XP compatible compact disks of all schedule data. Included on the disks shall be all of the tabular and graphic reports, network diagrams and bar chart data. Two copies shall be submitted on CD/R disks and two copies shall be submitted on CDD/RW disks. In addition, four plots of the CD/R disks will be approved initial or revised progress schedule for the contract. The approval will be documented by the Engineer on a corresponding plot of the schedule and returned to the Contractor.

Four copies of each schedule submission shall be printed in color on 11 in. x 17 in. (minimum) size sheets showing all columns, bars, column headings at the top, time scale at the top and showing relationships.

The schedule shall indicate the critical path to contract completion. Only one controlling item shall be designated at any point in time on the schedule.

Acceptance or approval of any progress schedule by the Engineer shall not be construed to imply approval of any particular method of construction, sequence of construction, any implied or stated rate of production. Acceptance will not act as a waiver of the obligation of the Contractor to complete the work in accordance with the contract proposal, Plans and Specifications, modify any rights or obligations of the Department as set forth in the contract, nor imply any obligation of a third party. Acceptance shall not be construed to modify or amend the contract or the time limit(s) therein. Acceptance shall not relieve the Contractor of the responsibility for the accuracy of any of the information included on the schedule. Failure of the Contractor to include in the schedule any element of work required for the performance of the contract, any sequence of work required by the contract, or any known or anticipated condition affecting the work shall not excuse the Contractor from completing all work required within the time limit(s) specified in the contract notwithstanding acceptance of the schedule by the Engineer.

Basis of Payment. This work will not be paid for separately, but shall be considered as included in the costs of the various items of work in the contract.

WINTER WORK

No adjustment will be made in the contract unit prices for any concrete if winter work is necessary to meet the required completion dates specified in the contract.

RESTRICTION ON WORKING DAYS AFTER A COMPLETION DATE

All temporary lane closures *on arterial streets* during the period governed by working days after a completion date will not be permitted during the hours of 6:00 a.m. to 9:00 a.m. and 3:00 p.m. to 6:00 p.m. Monday through Friday.

All lane closure signs shall not be erected any earlier than one-half (1/2) hour before the starting hours listed above. Also, these signs should be taken down within one-half (1/2) hour after the closure is removed.

COMPLETION DATE PLUS WORKING DAYS

Revise Article 108.05 (b) of the Standard Specifications as follows:

> "When a completion date plus working days is specified, the Contractor shall complete all contract items and safely open all roadways to traffic by 11:59 PM on November 23, 2016 except as specified herein.
>
> The Contractor will be allowed to complete all clean-up work and punch list items within 10 working days after the completion date for opening the roadway to traffic. Under extenuating circumstances the Engineer may direct that certain items of work, not affecting the safe opening of the roadway to traffic, may be completed within the working days allowed for cleanup work and punch list items. Temporary lane closures for this work may be allowed at the discretion of the Engineer."

Article 108.09 or the Special Provision for "Failure to Complete the Work on Time", if included in this contract, shall apply to both the completion date and the number of working days.

FAILURE TO COMPLETE THE WORK ON TIME

Should the Contractor fail to complete the work on or before the completion date as specified in the Special Provision for "Completion Date Plus Working Days", or within such extended time as may have been allowed by the Department, the Contractor shall be liable to the Department in the amount of **$10,000** , not as a penalty but as liquidated damages, for each calendar day or a portion thereof of overrun in the contract time or such extended time as may have been allowed.

In fixing the damages as set out herein, the desire is to establish a certain mode of calculation for the work since the Department's actual loss, in the event of delay, cannot be predetermined, would be difficult of ascertainment, and a matter of argument and unprofitable litigation. This said mode is an equitable rule for measurement of the Department's actual loss and fairly takes into account the loss of use of the roadway if the project is delayed in completion. The Department shall not be required to provide any actual loss in order to recover these liquidated damages provided herein, as said damages are very difficult to ascertain. Furthermore, no provision of this clause shall be construed as a penalty, as such is not the intention of the parties.

A calendar day is every day shown on the calendar and starts at 12:00 midnight and ends at the following 12:00 midnight, twenty-four hours later.

SUBMITTALS

There are elements of construction that may require long lead times between order and delivery to the project site for installation. The Contractor must prioritize timely submittals of shop drawings to minimize any delays in project execution.

Submittals must be complete, include all necessary and required information, and must be submitted for review in a timely matter to insure that the Contract meets all milestone and completion date requirements. No additional compensation and no extension of calendar days will be made due to delays in receiving material or equipment to the site because of incomplete or delayed shop drawing submittals.

The Contractor shall provide notice to the Engineer concerning shop drawing submittal schedules and when shop drawing submittal deadlines may be delayed.

ADDITIONAL INSURED

Add the following paragraph at the end of Article 107.27 – Insurance, of the Standard Specifications for Road and Bridge Construction dated January 1, 2012:

The Contractor shall name the Metropolitan Pier and Exposition Authority, its elected and appointed trustees, officers and officials, employees, agents, successors, and assignees as additional insured on each of the Contractor's General Liability insurance policies.

The Contractor and the Engineer shall mail, by certified mail, an executed copy of the Certificate of Insurance to the Metropolitan Pier and Exposition Authority prior to the start of construction on this project noted above. The address is as follows:

Metropolitan Pier and Exposition Authority
301 East Cermak Road
Chicago, Illinois 60616
Attention: James Reilly, Chief Executive Officer

With a copy to:

Ms. Darka Papushkewych
General Counsel
Metropolitan Pier and Exposition Authority
301 East Cermak Road
Chicago, Illinois 60616

And with a copy to:

Neal & Leroy, LLC
120 North LaSalle Street, Suite 2600
Chicago, Illinois 60602

All costs related to this requirement will be paid for under Article 109.04 – Payment for Extra Work.

STATUS OF UTILITIES TO BE ADJUSTED
Effective: January 30, 1987
Revised: January 24, 2013

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

NAME OF UTILITY	TYPE	LOCATION	Estimated Duration of Time for the Completion of Relocation or Adjustments
ComEd	Electric	Located in McCormick Place Bus Staging Lot at approx. Sta. 91+10	Potential conflict with demolition of existing pier and construction of new bridge structure. The existing transclosure will be removed by ComEd once the proposed service has been installed, connected and energized. ComEd estimates that the existing utility service will only have to be de-energized for one day and that the existing IDOT roadway lighting system should not be affected by this switchover. The utility "switchover" work will not commence until the IDOT Contractor has installed and the necessary infrastructure and equipment for the new service feed. The Contractor will be required to schedule and coordinate this utility work with ComEd.
City of Chicago	Electric	Located near Donnelly Drive at approx. Sta. 93+38	Proposed Pier 5W potentially in conflict with existing City electric line. Contractor to locate existing City electric line. If in conflict with proposed Pier 5W, Contractor to coordinate the relocation of the electric line with the City.

AT&T	Telephone / Fiber Optic	Ducts and manholes located below the existing SB I-55 bridge at approx. Sta. 84+50	An existing manhole and three conduit packages are located within the proposed SB I-55 retained earth approach roadway to be constructed with lightweight cellular concrete fill. AT&T to remove the existing manhole and install new concrete encased ducts to be self-supporting to allow for the installation of the new storm sewer. New cables will be pulled from 25th Street to 24th Street. Estimated duration of work is 5 to 6 months to be completed before February 2015.
Comcast	Fiber Optic	Located near Donnelly Drive at approx. Sta. 93+38	Proposed Pier 5W potentially in conflict with existing fiber optic line. Future construction of Pier 5E drilled shaft foundation for NB I-55 (under separate contract) in conflict with fiber optic line to south. Comcast to relocate the fiber optic line away from both Pier 5W and future Pier 5E. Estimated duration of work is 4 months to be completed before February 2015.
Unknown	Unknown Pipe	Along north side of SB I-55 at approx. Sta. 84+30, 28' Lt.	Exploration trench included to locate existing closed pipe within the vacated Cottage Grove ROW which may be in conflict with proposed manhole reconstruction and installation of the MSE wall. The unknown pipe may potentially be a 12" retired gas main or abandoned water main. Contractor to locate pipe and if in conflict with the proposed improvements, the Contractor will remove and dispose of the section of pipe in conflict, and plug the existing pipe to remain.

Peoples Gas	Gas	Existing 8” gas main located near Donnelly Drive at approx. Sta. 93+38	Proposed drilled shaft foundation in conflict with existing 8” gas main at Pier 5W. Peoples Gas relocation to be completed before February 2015.
Peoples Gas	Gas	Existing 8” gas main in 48” casing pipe at approx. Sta. 94+40	Proposed drilled shaft foundations for Pier 6W are offset from existing gas main while the proposed pier crashwall spans over it. Peoples Gas will maintain the existing gas main at this location. The main shall be protected and service must be maintained at all times.
Peoples Gas	Gas	Existing 8” gas main at approx. Sta. 95+90	Proposed drilled shaft foundations for Pier 7W are offset from existing gas main while the proposed pier crashwall spans over it. Peoples Gas will maintain the existing gas main at this location. The main shall be protected and service must be maintained at all times. The Contractor shall verify location of gas main prior to initiating drilling of proposed foundation.
Peoples Gas	Gas	Existing 8” gas main at approx. Sta. 96+90	Proposed drilled shaft foundations for Pier 8W are offset from existing gas main while the proposed pier crashwall spans over it. Peoples Gas will maintain the existing gas main at this location. The main shall be protected and service must be maintained at all times.

Peoples Gas	Gas	Existing 8” gas main at approx. Sta. 102+03 along Ramp SW on east side of Moe Drive	Proposed drilled shaft foundations for Pier 11W are offset from existing gas main while the proposed pier spans over it. Peoples Gas will maintain the existing gas main at this location. The main shall be protected and service must be maintained at all times.
Peoples Gas	Gas	Existing 8” and 12” gas main at approx. Sta. 103+45 along Ramp SW on east side of Moe Drive	Existing gas main including bends, reducer and casing pipe in close proximity to proposed north abutment and drilled shaft foundations for Ramp SW. Peoples Gas will maintain the existing gas main at this location. The main shall be protected and service must be maintained at all times. Hand excavation is required to field verify the horizontal and vertical location of gas main(s) prior to crossing and working within 3 feet of all gas facilities. Contractor to field verify location and depth of gas main, and coordinate the proposed wall layout and configuration with the MSE Wall supplier.
City of Chicago	Water	Existing 36” water main running N/S along west side of MLK Drive below sidewalk.	Existing main in close proximity to proposed Pier 1W and Pier 1E (under separate contract). Under this contract, the water main will be relocated to within SB MLK prior to construction of the proposed pier foundations.

City of Chicago	Water	Existing 8" water main located along the north side of 25th Street east of MLK Drive.	Future construction of Pier 2E and 3E drilled shaft foundations for NB I-55 (under separate contract) in conflict with existing 8" main. Under this contract, the water main will be relocated in conjunction with the 36" main along MLK.
City of Chicago	Water	Fire hydrant located within the 24th Street Parking Lot at approx. Sta. 98+75, 28' Rt.	Under this contract, the hydrant and will be removed and new hydrant installed along Moe Drive.
Qwest	Fiber Optic	Located along west side of Metra ROW	Exploration trench included to locate any underground utilities within the vicinity of Pier 6W foundations and the proposed Metra duct bank to determine potential conflicts.
MWRD	Sewer	Existing 6'-4"x8'-0" sewer located to east of CN Tracks at approx. Sta. 96+30	Existing facilities to be protected and access provided at all times. No manholes or access hatches shall be covered or buried, and no debris allowed to enter MWRD sewers.
Private (McCormick Place)	Electric	Existing electric line at approx. Sta. 399+57 along Ramp NW	Proposed drilled shaft foundation for Pier 13W along Ramp NW in conflict with existing electric line to be removed and replaced under this contract.
Metra Electric	Catenary lines	Tracks 1 to 4	Existing catenary lines attached to bottom of existing steel girders. Under this contract, an independent support system to be installed and the catenary lines to be removed from the existing structures and suspended from the new catenary support structures.

Metra Electric	Overhead Power/ Communications	Located along the west side of Track 1	Under this contract, the existing overhead lines to be relocated below ground. Relocation to account for interim condition with existing NB I-55 pier layout and proposed SB I-55 layout and for ultimate reconstruction of both inbound and outbound bridges.

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.

In accordance with 605 ILCS 5/9-113 of the Illinois Compiled Statutes, utility companies have 90 days to complete the relocation of their facilities after receipt of written notice from the Department. The 90-day written notice will be sent to the utility companies after the following occurs:

1) Proposed right of way is clear for contract award.
2) Final plans have been sent to and received by the utility company.
3) Utility permit is received by the Department and the Department is ready to issue said permit.
4) If a permit has not been submitted, a 15 day letter is sent to the utility company notifying them they have 15 days to provide their permit application. After allowing 15 days for submission of the permit the 90 day notice is sent to the utility company.
5) Any time within the 90 day relocation period the utility company may request a waiver for additional time to complete their relocation. The Department has 10 days to review and respond to a waiver request.

RAILROAD PROTECTIVE LIABILITY INSURANCE (5 AND 10) (BDE)
Revised: January 1, 2006

Description. Railroad Protective Liability and Property Damage Liability Insurance shall be carried according to Article 107.11 of the Standard Specifications, expect 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.

NAMED INSURED & ADDRESS	NUMBER & SPEED OF PASSENGER TRAINS	NUMBER & SPEED OF FREIGHT TRAINS
METRA CN/IC RR under I-55, I-94 to US 41 (LSD). METRA** 547 West Jackson Blvd. Chicago, IL 60661	217 trains/day@ 65 mph.	-0-
DOT/AAR No.: 289 511L RR Division: Northern	RR Mile Post: 2.9 RR Sub-Division: Richton.	
For Freight/Passenger Information Contact: Dan Kneita Phone: 312-322-8016 For Insurance Information Contact: Marilyn Schlismann Phone: 312-322-7093		
METRA CN/IC RR under I-55, I-94 to US 41 (LSD). Illinois Central Railroad Company And Its Parents	6 trains/day @ 79 mph	40 trains/day @ 40mph
17641 S. Ashland Ave Homewood, IL 60430-1345	(Amtrak)	
DOT/AAR No.: McCormick PL RR Division: Southern District	RR Mile Post: Under I-55 RR Sub-Division: Chicago District	
For Freight/Passenger Information Contact: Patrick Jones Phone: 708/332-3557 For Insurance Information Contact: Rob Glass Phone: 708-332-6673		

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.

** The Commuter Rail Division of the Regional Transportation Authority, a division of an Illinois municipal corporation, and its affiliated separate Public corporation known as the Northeast Illinois Regional Commuter Railroad Corporation, both operating under the service mark Metra, as now exists or may hereafter be constituted or acquired, and the Regional Transportation Authority, an Illinois municipal corporation.

RAILROAD FLAGGING (IC RR)

Description. This work shall be performed as in accordance with Sections 107.12 and 109.05 of the Standard Specifications.

General Requirements. The flagging costs incurred for the work associated at the location of the FAI 55 at US 41 (LSD) and the Illinois Central Railroad Company (IC) tracks will be reimbursed by IDOT in accordance with Section 109.05 of the Standard Specifications. The Contractor is responsible for prepaying the CN in advance for flagging services provided. The Contractor shall deposit the cost of flagging services for thirty (30) days with the CN. If the Contractor uses less than 30 days, then the Contractor will be charged for the days used and the balance will be reimbursed back to the Contractor. The Contractor will then be reimbursed by IDOT for the actual number of flagging days used. The Contractor is required to conduct operations at all times in full compliance with the rules, regulations and requirements of the IC Special Provisions contained in the Contract Specifications and as described below.

The Contractor shall give thirty (30) days advance written notice to the Engineering Superintendent of the Railroad or his authorized representative prior to commencement of any construction work on the Improvement affecting the railroad property. The Contractor shall notify the Railroad sufficiently in advance of when the protective services are required. The Contractor shall make every effort to notify the Railroad in advance if a previously requested flagger will not be needed for any reason. Any costs for flagging protection provided by the Railroad at the Contractor's request for those days when the Contractor does not work shall be borne by the Contractor.

Basis of Payment. RAILROAD FLAGGING (IC RR) will be paid for according to Article 109.05 of the Standard Specifications.

METRA APPLICATION FOR RIGHT OF ENTRY

Application for Right of Entry

(Attach any pertinent Plans or approval correspondence when returning this Application)

Date: _____ Company Name: _____
(Legal name of party to occupy Metra Property)

Company Address: _____

Contact Person/Title: _____

Telephone: _____ E-Mail: _____

Metra District: Milwaukee West / Milwaukee North / Rock Island / South West Service / Electric

Location: _____
(Distance from nearest street or railroad mile post)

Purpose: (This must be detailed & complete; if applicable, attach engineering plans & details to support)
Note: Describe only the portion of the project related to this request to enter Metra property

Does work on Metra property include:

- ☐ Soil Borings – to what depth: _____
- ☐ Excavation – to what depth: _____
- ☐ Construction _____
- ☐ Demolition: Describe _____
- ☐ Bridge Inspection _____
- ☐ Bridge Repair _____
- ☐ Other (explain) _____

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Will equipment will be used on Metra property?

(If yes, explain)

Does access to property require crossing Metra tracks?

(If yes, how/where) ☐ At public crossing

☐ Other
(Explain)

Will equipment overhang Metra track or property at any time?

(If yes, explain)

Expected length of time needed on Metra property:

List all sub-contractors, if applicable, needing access to Metra property in conjunction with this project:

Submit Right of Entry Application to:
Mr. Daniel A. Kneita, Associate Contract Administrator
Contracts & Energy Management
547 W. Jackson Boulevard
Chicago, IL 60661-5717
Office: (312) 322-8016
E-Mail:*dkneita@metrarr.com*

ILLINOIS CENTRAL RAILWAY COMPANY APPLICATION FOR RIGHT OF ENTRY

IMPORTANT NOTICE

CORPORATIONS

License must be signed by the President or a Vice President of the Corporation or Company, or be accompanied by a certified resolution of the Board of Directors authorizing execution by a lesser official.

PARTNERSHIP

License must be signed by all of the partners.

MUNICIPALITIES OR GOVERNMENTAL AGENCIES

License must be accompanied by a certified resolution authorizing the official signing the License to execute on behalf of the Governmental Body. The resolution should not be certified by the same official who executed the License.

RIGHT OF ENTRY LICENSE AGREEMENT

Illinois Central Railway Company (hereinafter called Railroad Company) hereby grants pursuant to this Right of Entry License Agreement (hereinafter called License) to _____ (hereinafter called Licensee) license and permission, at Licensee's sole cost, risk and expense, to enter Railroad Company's property in the vicinity of _____, Railroad Milepost _____, _____ Subdivision for purposes related to _____ near _____, IL on, over and near Railroad Company's tracks and right-of-way, as generally shown on Location Exhibit, attached hereto and made a part hereof.

Licensee shall pay to Railroad Company upon execution of this License the sum of **$750.00** for the privileges granted by this License. The aforesaid sum is not refundable in the event Licensee elects not to enter upon Railroad Company's property or in the event Railroad Company elects to terminate this License for any reason whatsoever.

Licensee shall not enter Railroad Company's premises for the purpose as set forth above without having first given Railroad Company's Engineering Manager or their authorized representative at least five (5) working days advance notice of the date Licensee plans to commence the work.

Railroad Company shall have the right, but not the duty, to require Licensee to furnish detailed plans prior to entry upon the premises and to view and inspect any activity or work on or above Railroad Company's property. If in the sole opinion of the authorized representative of Railroad Company any said activity or work is undesirable for any reason, Railroad Company shall have the right to terminate this License at once.

Railroad Company shall have the right, but not the duty, to restrict Licensee's activity on Railroad Company's property in any way that Railroad Company may, in its sole opinion, deem necessary from time to time and shall also have the right, but not the duty, to require Licensee to adopt and take any safety precautions that Railroad Company may, in its sole opinion, deem necessary from time to time. No work shall be performed or equipment located within twenty-five feet (25') of the centerline of the nearest railroad track without the expressed permission of Railroad Company's Engineering Manager or their duly authorized representative and then only when either the track has been removed from service or Railroad Company flag protection is provided.

Railroad Company may, at Licensee's sole cost, risk and expense, furnish whatever protective services it considers necessary, including, but not limited to, flag protection, and inspectors.

Licensee shall at all times conduct its work in accordance with any and all "Special Provisions" which may be appended hereto which, by reference hereto, are hereby made a part hereof.

AS A CONSIDERATION AND AS A CONDITION, WITHOUT WHICH THIS LICENSE WOULD NOT HAVE BEEN GRANTED, LICENSEE AGREES TO INDEMNIFY AND SAVE HARMLESS RAILROAD COMPANY, ITS PARENTS, AFFILIATES, AND THEIR DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS AND TO ASSUME ALL LIABILITY FOR DEATH OR INJURY TO ANY PERSONS, INCLUDING, BUT NOT LIMITED TO, OFFICERS, EMPLOYEES, AGENTS, PATRONS AND LICENSEES OF THE PARTIES HERETO, AND FOR ALL LOSS, DAMAGE OR INJURY TO ANY PROPERTY, INCLUDING, BUT NOT LIMITED TO, THAT BELONGING TO THE PARTIES HERETO, TOGETHER WITH ALL EXPENSES, ATTORNEYS' FEES AND COSTS INCURRED OR SUSTAINED BY RAILROAD COMPANY, WHETHER IN DEFENSE OF ANY SUCH CLAIMS, DEMANDS, ACTIONS AND CAUSES OF ACTION OR IN THE ENFORCEMENT OF THE INDEMNIFICATION RIGHTS HEREBY CONFERRED, IN ANY MANNER OR DEGREE CAUSED BY, ATTRIBUTABLE TO OR RESULTING FROM THE EXERCISE OF THE RIGHTS HEREIN GRANTED, OR THE FAILURE OF LICENSEE TO CONFORM TO CONDITIONS OF THIS LICENSE, WORK PERFORMED BY RAILROAD COMPANY FOR LICENSEE UNDER THE TERMS OF THIS LICENSE OR THE CONSTRUCTION, MAINTENANCE, REPAIR, RENEWAL, ALTERATION, CHANGE, RELOCATION, EXISTENCE, PRESENCE, USE, OPERATION OR REMOVAL OF ANY STRUCTURE INCIDENT THERETO, OR FROM ANY ACTIVITY CONDUCTED ON OR OCCURRENCE ORIGINATING ON THE AREA COVERED BY THIS LICENSE, REGARDLESS OF ANY NEGLIGENCE OF RAILROAD COMPANY, ITS OFFICERS, EMPLOYEES AND AGENTS. SAID LICENSEE AGREES ALSO TO RELEASE, INDEMNIFY AND SAVE HARMLESS RAILROAD COMPANY, ITS OFFICERS, EMPLOYEES AND AGENTS FROM ALL LIABILITY TO LICENSEE, ITS OFFICERS, EMPLOYEES, AGENTS OR PATRONS, RESULTING FROM RAILROAD OPERATIONS AT OR NEAR THE AREA IN WHICH LICENSE IS TO BE EXERCISED, WHETHER OR NOT THE DEATH, INJURY OR DAMAGE RESULTING THEREFROM MAY BE DUE TO WHOLE OR IN PART TO THE NEGLIGENCE OF RAILROAD COMPANY, ITS OFFICERS, EMPLOYEES OR AGENTS. AT THE ELECTION OF RAILROAD COMPANY, LICENSEE, UPON NOTICE TO THAT EFFECT, SHALL ASSUME OR JOIN IN THE DEFENSE OF ANY CLAIM BASED UPON ALLEGATIONS PURPORTING TO BRING SAID CLAIM WITHIN THE COVERAGE OF THIS SECTION.

Before commencing work and until this License shall be terminated, Licensee shall provide and maintain the following insurance in form and amount with companies satisfactory to and as approved by Railroad Company.

a. Statutory Workers Compensation and Employer's Liability insurance.

b. Automobile Liability in an amount not less than $1,000,000 dollars combined single limit.

c. Comprehensive General Liability (occurrence form) in an amount not less than $5,000,000 dollars per occurrence, with an aggregate limit of not less than $10,000,000 dollars. The Policy must name Railroad Company and its Parents as additional insureds in the following form:

Railroad Company name and its Parents
Attn: Rob Glass
17641 South Ashland Avenue
Homewood, IL 60430
708.332.6673 (office)
Rob.Glass@cn.ca

If the commercial general liability policy required herein contains any exclusions related to doing business or undertaking construction or demolition on, near, or adjacent to railroad facilities; such exclusion must be removed through issuance of endorsement CG 24 17, or a similar endorsement approved by Railroad Company in its sole discretion prior to the commencement of work hereunder.

d. In the event the privileges provided herein to Licensee involve any work that could result in the discharge, spillage, disposal, release or escape of any Hazardous Material or petroleum product onto the Railroad Company's property, Licensee shall purchase and maintain in effect at all times during the term of this License a Contractor's Pollution Liability policy in an amount not less than two million dollars ($2,000,000) combined single limit (and with a deductible not to exceed $50,000) insuring Railroad against any and all damages, costs, liabilities and expenses resulting from on- or off-site bodily injury (including death to any person), on or off-site loss, damage or destruction of property (including that belonging to the parties hereto), and on-or off-site cleanup costs (including expenses incurred in the investigation, removal, remediation, neutralization, or immobilization of contaminated soils, surface water, groundwater or any other contamination) growing out of or incidental to any discharge, spillage, disposal, release, or escape of any Hazardous Material or petroleum product arising therefrom. For purposes of this Agreement , the term "Hazardous Material" shall include, without limit, any flammable explosives, radioactive materials, hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. §§ 9601, et seq.), the Hazardous Material Transportation Act, as amended (49 U.S.C. §§ 1801, et seq.), the Resource Conservation and Recovery Act, as amended (42 U.S.C. §§ 6901 et seq.), the Toxic Substances Control Act, as amended (15 U.S.C. §§ 2601, et seq.), similar laws or ordinances enacted by any state, county or municipality in which the Property is located, or in the regulations adopted and publications promulgated pursuant to any of the above, as such laws or regulations now exist or may exist in the future.

   Licensee is required to advise Railroad Company by thirty (30) day advance written notice when any work to be performed under this License may require Pollution Liability Insurance pursuant to the previous paragraph.

Before commencing work, Licensee shall deliver to Railroad Company a certificate of insurance evidencing the foregoing coverage, and upon request, Licensee shall deliver a certified, true and complete copy of the policy or policies at its sole cost and expense. The policies shall provide for not less than thirty (30) days prior written notice to Railroad Company of cancellation of or any material change in, the policies, and shall contain the waiver of right of subrogation.

It is understood and agreed that the foregoing insurance coverage is not intended to, and shall not, relieve Licensee from or serve to limit Licensee's liability under the indemnity provisions of this License or any applicable agreement.

It is further understood and agreed that, so long as this License shall remain in force or until the Licensee's work is complete and Licensee shall have vacated the Railroad Company's property (whichever shall be later), Railroad Company shall have the right, from time to time, to revise the amount or form of insurance coverage provided as circumstances or changing economic conditions may require. Railroad Company shall give Licensee written notice of any such requested change at least thirty (30) days prior to the date of expiration of the then existing policy or policies; and Licensee agrees to, and shall, thereupon provide Railroad Company with certificates reflecting such revised policy or policies thereof.

If a contractor is to be employed by Licensee, then, before any work is commenced hereunder, Licensee shall establish, to the reasonable satisfaction of Railroad Company, that either (i) the contractor has in place insurance policies covering its own work that comply with the required insurance coverages, limits and terms applicable to Licensee, or (ii) the contractor is fully covered under Licensee's insurance policies.

Railroad Company's exercise or failure to exercise any rights under this License shall not relieve Licensee of any responsibility under this License, including, but not limited to, the obligation to indemnify Railroad Company as herein provided.

Cost and expense for work performed by Railroad Company, as referred to in this License, shall consist of the actual cost of labor, materials, equipment and other plus Railroad Company's standard additives in effect at the time the work is performed.

This License is revocable at the option and discretion of Railroad Company upon notice to Licensee, and shall not be transferred or assigned. Unless sooner revoked by Railroad Company, extended at request of Licensee and granted by Railroad Company in writing, or relinquished by act of Licensee, this License shall terminate on _____.

Upon termination of this License, Licensee shall remove all of its property, leaving Railroad Company's premises in a neat and safe condition satisfactory to Railroad Company's Engineering Manager or their authorized representative, failing which Railroad Company may remove said materials from its premises at Licensee's sole cost, risk and expense, or at its option, may deem such property as abandoned and henceforth owned by Railroad Company, with no compensation for Licensee whatsoever.

ILLINOIS CENTRAL RAILWAY COMPANY

By: _____

Print Name: _____

Title: _____

ACCEPTED:

_____

By: _____

Print Name: _____

Title: _____

SPECIAL PROVISIONS

RELATIVE TO FLAGGING AND OTHER PROTECTION OF RAILROAD COMPANY TRAFFIC AND FACILITIES DURING CONSTRUCTION ADJACENT AND ABOVE, ON OR ACROSS, THE PROPERTY OF, OR ON, ABOVE AND BENEATH THE TRACKS OF THE ILLINOIS CENTRAL RAILWAY COMPANY

The Licensee shall, before entering upon the property of Railroad Company for performance of any work, secure a fully executed right of entry license from Railroad Company's Engineering Manager or their authorized representative for the occupancy and use of Railroad Company's property. Licensee shall confer with Railroad Company relative to requirements for railroad clearances, operation and general safety regulations.

Prior to any entry onto Railroad Company's property, employees and/or contractor(s) of Licensee doing work shall determine by the guidelines hereinafter provided and by the work to be performed the level of safety training to be required.

All employees and/or contractor(s) of Licensee not hired by Railroad Company that will work on CN property are required to have minimum www.contractororientation.com.

a. EXCEPTION: Railroad Company has exempted those it classifies as "Delivery Persons" from this training. This will include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

All employees and/or contractor(s) of Licensee hired by Railroad Company which will work on Railroad Company property are required to have minimum CN Safety and Security Awareness training, in addition to undergoing a background check. This training and background check must be obtained through the eRailSafe.com website. If not done before, the contractor must contact CN Special Agent James Conroy at 708-332-5947 or James.Conroy@cn.ca to be issued a vendor number prior to accessing the noted website. Minimum information required of the Licensee and/or their contractor when contacting either Special Agent James Conroy or e-RailSafe is Name, Address, Telephone, Contact Person for State Projects, DOT Contract Number, and the AAR/DOT Number. This training is good for a period of two years.

a. EXCEPTION: Railroad Company has exempted those employees of contractors providing paving services at a road crossing under construction or repair from this requirement.

b. EXCEPTION: Railroad Company has exempted those it classifies as "Delivery Persons" from this training. This will include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

All employees and/or contractor(s) of Licensee hired by Railroad Company, whose duties include and who are engaged in the inspection, construction, maintenance, or repair of railroad track, bridges, roadway, signal and communication systems, roadway facilities, or roadway machinery that will work foul of or have the potential to foul a live track are considered Roadway Workers under FRA regulations and CN Policy. They must complete the On-Track Safety Training course approved by Railroad Company and provided by R.R. Safety – AMR, P.O. Box 75, Lomira, WI 53048, telephone (920) 517-1677, email rrsafetytraining@yahoo.com. This training must be repeated at least once each calendar year.

a. EXCEPTION: Railroad Company has exempted those employees of contractors providing paving services at a road crossing under construction or repair from this requirement.

b. EXCEPTION: Railroad Company has exempted those it classifies as “Delivery Persons” from this training. This will include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

c. All the employees and/or contractor(s) of Licensee who will operate on-track machinery or those who will provide protection for other employees and/or contractor(s) of Licensee must also be trained on CN US Operating Rules pertaining to their duties. They must take and pass the required examination. This training is good for a period of two years.

d. “Potential to foul a live track” is considered, at a minimum, to be working within twenty-five feet of the track; or as otherwise to be determined by CN Design & Construction Department.

The employees, contractor(s) , and/or agents of the Licensee and/or its contractor shall qualify for, and make available for inspection to Railroad Company's employees or other authorized personnel at all times while on Railroad Company property, a photo identification issued by www.e-railsafe.com, along with at least one other government-issued form of identification. Licensee and/or their contractor shall bear all costs of compliance with the requirements of this Section. Railroad Company reserves the right to bar any of employees or agents of Licensee and/or their contractor from Railroad Company’s property at any time for any reason.

Licensee and/or any contractor engaged on their behalf, shall at all times conduct work in a manner satisfactory to the Engineering Manager of Railroad Company, or their authorized representative, and shall exercise care so as to not damage the property of Railroad Company, or that belonging to any other grantees, licensees, permittees or tenants of Railroad Company, or to interfere with railroad operations.

Engineering Manager of Railroad Company, or their authorized representative, will at all times have jurisdiction over the safety of railroad operations., The decision of the Engineering Manager or their authorized representative as to procedures which may affect the safety of railroad operations shall be final, and Licensee and/or their contractor shall be governed by such decision.

All work shall be conducted in such a manner as will assure the safety of Railroad Company. Railroad Company's authorized representative shall have the right, but not the duty, to require certain procedures to be used or to supervise the work on Railroad Company's property.

Should any damage occur to Railroad Company property as a result of the authorized or unauthorized operations of Licensee and/or their contractor and Railroad Company deems it necessary to repair such damage or perform any work for the protection of its property or operations, the Licensee and/or their contractor, as the case may be, shall promptly reimburse Railroad Company for the actual cost of such repairs or work. For the purpose of these Special Provisions, actual cost shall be deemed to include the direct cost of any labor, materials, equipment, or contract expense plus Railroad Company's current standard additives in each instance.

If the work requires the construction of a temporary grade crossing across the track(s) of Railroad Company, Licensee and/or their contractor shall make the necessary arrangements and execute Railroad Company's temporary grade crossing agreement for the construction, protection, maintenance, and later removal of such temporary grade crossing. The cost of such temporary grade crossing construction and later removal shall be prepaid to Railroad Company. Additional costs for repairs, maintenance or protection will be paid within thirty (30) days upon receipt of bill(s) therefor.

Licensee and/or their contractor shall at no time cross Railroad Company's property or tracks with vehicles or equipment of any kind or character, except at such temporary grade crossing as may be constructed as outlined herein, or at any existing and open public grade crossing. Operation over such crossing shall be at the direction and method of Railroad Company's Engineering Manager or their authorized representative.

Railroad Company may, at Licensee's and/or their contractor's sole cost, risk and expense, furnish whatever protective services it considers necessary, including, but not limited to, flagger(s), inspector(s), and stand-by personnel. Flagging protection, inspection services, or standby personnel required by Railroad Company for the safety of railroad operations because of work being conducted by Licensee and/or their contractor, or in connection therewith, will be provided by Railroad Company and the cost of Licensee and shall be prepaid to Railroad Company by Licensee and/or their contractor. Flagging protection, inspection services, or standby personnel, necessary or provided in excess of prepayment amounts will be billed at the proper rates and will be promptly paid by overnight delivery.

In the event Railroad Company is unable to furnish protective services at the desired time or on the desired date(s), or if Licensee's prepayment for such services is exhausted and not replenished by Licensee and/or their contractor, Licensee and/or their contractor shall not perform any work on Railroad Company's property until such time and date(s) that appropriate Railroad Company services can be made available and/or appropriate prepayment is received. It is understood that Railroad Company shall not be liable for any delay or increased costs incurred by Licensee and/or their contractor owing to Railroad Company's inability or failure to have appropriate protective services available at the time or on the date requested.

Licensee and/or their contractor shall request and secure flagging protection by written notice to Railroad Company using CN's "Request for Flagging Services" form. This form must be submitted at least ten (10) working days in advance of proposed performance of any work or access to Railroad Company's property.

Flagging protection will be required during any operation involving direct and potential interference with Railroad Company's tracks or traffic. This may include but is not limited to fouling of railroad operating clearances, reasonable proximity of accidental hazard to railroad traffic, work within twenty-five (25) feet horizontally of the nearest centerline of any railroad track, any work over any railroad track, or in any other condition that Railroad Company deems protective services necessary, which may include work on or off Railroad Company's property more than twenty-five (25) feet from the nearest centerline of any railroad track, such as any equipment extension (including but not limited to a crane boom) that will reach or has the potential to reach within twenty-five (25) feet of any track.

Licensee and/or their contractor shall request, prepay, and secure Railroad Company signal facility locates by written notice to Railroad Company along with submission of CN's "Request for Flagging Services" form at least ten (10) working days in advance of proposed performance of any work or access to Railroad Company property. Notice to Railroad Company does not fulfill or satisfy any other notification requirements for utility locates for non-railroad facilities.

Railroad Company may require that prior to digging, trenching, or boring activities on or near Railroad Company property, or beneath any railroad track, an on-site meeting be conducted with Railroad Company's Signal Department representative. No digging, trenching or boring activities shall be conducted in the proximity of any known buried Railroad Company signal cables without Railroad Company's Signal Department representative being present.

The rate of pay for Railroad Company employees will be the prevailing hourly rate for not less than eight (8) hours for the class of labor at regular rates during regularly assigned work hours, and at overtime rates outside of regular hours and in accordance with Labor Agreements or Schedules plus Railroad Company's current standard additives in each instance.

Wage rates are subject to change, at any time, by law or agreement between Railroad Company and employees, and may be retroactive because of negotiations or a ruling by an authorized Governmental Agent. If the wage rates are changed, Licensee and/or their contractor shall pay on the basis of the new rates and/or additives.

No digging, trenching, or boring on Railroad Company property shall be conducted without Railroad Company's written approval of the plans that were furnished to Railroad Company's Engineering Manager at least thirty (30) in advance of the excavation.

The following temporary clearances are the minimum that must be maintained at all times during any operation on or adjacent to Railroad Company property:

Vertical:	22'-0" (7.00 m) above top of highest rail within 12'-0" (3.81 m) of the centerline of any track
Horizontal:	12'-0" (3.81 m) from centerline of the nearest track, measured at right angles thereto

If lesser clearances than the above are required for any part of the work, Licensee and/or their contractor shall secure written authorization from Railroad Company's Engineering Manager for such lesser clearances in advance of the start of that portion of the work.

No materials, supplies, or equipment will be stored within twenty-five (25) feet from the centerline of any railroad track, measured at right angles thereto.

Licensee and/or their contractor will be required upon the completion of the work to remove from within the limits of Railroad Company's property all machinery, equipment, surplus materials, false work, rubbish or temporary buildings, and to leave said property in a condition satisfactory to the Engineering Manager of Railroad Company or their authorized representative.

Nothing in these Special Provisions shall be construed to place any responsibility on Railroad Company for the quality or conduct of the work performed by Licensee and/or their contractor hereunder. Any approval given or supervision exercised by Railroad Company hereunder, or failure of Railroad Company to object to any work done, material used, or method of operation shall not be construed to relieve Licensee and/or their contractor of any obligations pursuant hereto or under the License these Special Provisions are appended to.

Accepted: _____

Print Name: _____

Request for flagging services

Southern Region

TO: **CN** **Date submitted: _____**
Attn: Mary Ellen Carmody, Audit Officer
2800 Livernois, Suite 220
Troy, Michigan 48083
(248) 740-6227
(248) 740-6036 fax
maryellen.carmody@cn.ca

FROM: _____
(Name)

I am requesting a flagman for the following project. **All blanks below must be completely filled in before any flagman request will be honored. Proof of Insurance must accompany this form. Flagman will be provided within five (5) business days, at your cost, depending on availability. Direct your calls concerning availability and problems to (248) 740-6227.**

Project Location: _____

RR milepost, Street, etc. _____

Company: _____

Billing Address: _____

City: _____ State: _____ Zip: _____

Company Phone: _____ Company Fax: _____

**Agreement or Authorization No.: _____ Dated: _____

With: _____

Contractor's Contact Person: _____ Phone: _____

Date(s) Flagging needed: _____

Starting time: _____ Ending Time: _____

Location for flagman to report: _____

Prepayment for WEEKDAY flagman protection is required, and must be submitted by over-night delivery to the address shown at the top of this page. The prepayment amount will be based on the number of weekdays a flagman is required, at the base rate of $1000.00 per weekday (1-8 hour continuous period). Prepayment for WEEKEND flagman protection will be at the rate of $150.00 per hour, with an eight hour (8) minimum of $1,200.00. Any hours in excess of eight (8) continuous hours per flagman on either WEEKDAY or WEEKEND days are to be prepaid at the rate of $150.00 per hour. Hours of flagman protection provided in excess of prepayment amounts will be billed at the proper rate and will be promptly paid by over-night delivery.

If project will run longer than originally anticipated, MaryEllen Carmody must be contacted in advance, and an additional check for the overrun submitted by over-night delivery.

Cost for a railroad S&C cable locate is $250.00, and is to be prepaid by over-night delivery.

*** You must have an agreement with CN railroad subsidiary, such as a Right of Entry Permit, Formal Agreement or State, County, City Project Number and proof of insurance before you can enter the property.*

Description of work to be performed: _____

_____

_____

Will you receive State or Federal Funds as reimbursement for this project? Yes____ No____

I agree to pay for flagging services as requested: _____

Attach map or other location info and fax completed form with cover letter on your company's letterhead and proof of insurance to MaryEllen Carmody (248) 740-6036.

CN RIGHT OF ENTRY (ROE) LICENSE AGREEMENT

Chris Garman
Manager Public Works
17641 South Ashland Avenue
Homewood, IL 60430
T 708.332.3557
F 708.332.3514
Email: christopher.garman@cn.ca

RIGHT OF ENTRY (ROE) LICENSE AGREEMENT INFORMATION

Cost is $750.00* for application

Railroad Company requires everyone (contractor, consultants, etc.) working on Railroad Company property to have a Right-of-Entry (ROE) License Agreement. ROE license agreement applications are handled by email. Once Railroad Company receives the information requested below, and if application is approved, Railroad Company will draw up a ROE License Agreement, and will forward electronic copy by email for applicant's execution. Applicant must return one (1) executed original copy, a check for $750.00*, and proof of insurance, together in one package to the address above. Application and ROE License Agreement will be delayed if Railroad Company receives the required documents separately, incomplete, or inaccurate. Railroad Company will return a fully executed digital copy of the ROE License Agreement by email for Applicant's files and records. No work may occur on Railroad Company property nor will flagging protection be provided until ROE License Agreement has been fully executed by both parties and returned. * Fee may be increased for special handling.

Please use this form and return by email to submit application request for a Right of Entry agreement.

Contact name –

Name of Applicant/contractor -

Street Address –

City, State, Zip –

Telephone –

Reason for ROE –

Duration of ROE –

Public Agency's Project No. –

Public agency Easement No. (if known) –

Location of project –

FRA/AAR/DOT Crossing No. –

If unable to locate this number at jobsite, please use following links to obtain:
http://safetydata.fra.dot.gov/officeofsafety/publicsite/crossing/xinggryloc.aspx

In Illinois
http://www.icc.illinois.gov/railroad/advanced.aspx?

If project job site does not have a FRA/AAR/DOT Crossing Number, please attach an aerial snapshot to help identify specific location.

ROE may take up to 4+ weeks to obtain

FAQ

What are the insurance requirements?

Railroad Company allows outside parties to come onto Railroad Company property to perform work, such as survey or inspection work, installation of pipelines and wirelines, and other work for projects necessitating the occupancy of Railroad Company. Before commencing work, and until the license of allowing such occupancy ends or is terminated, outside parties shall provide and maintain the following insurance in form and amount with companies satisfactory to and as approved by Railroad Company.

1. Minimum insurance required of outside party:

   A. Statutory Workers Compensation and Employer's Liability Insurance.

   B. Automobile Liability Insurance in an amount not less than $1,000,000 combined single limit.

   C. Commercial General Liability Insurance (Occurrence Form) in an amount not less than $5,000,000 per occurrence, with an aggregate limit of not less than $10,000,000. The policy must name Railroad Company and its Parents as additional insureds in the following form:

      Railroad Company name and its Parents
      Attn: Chris Garman
      17641 South Ashland Avenue
      Homewood, IL 60430
      708.332.6673 (office)
      Christopher.Garman@cn.ca

      The policy must remove any provisions excluding coverage for injury, loss or damage arising out of or resulting from doing business or undertaking construction or demolition on, near, or adjacent to railroad track or facilities using endorsement CG 2417 10 01 or equivalent approved by Railroad Company.

   D. When outside party is required by Railroad Company or Governing Authority to purchase Railroad Protective Liability Insurance to cover work on, near or adjacent to railroad track or facilities, and outside party is not being hired for this project by Railroad Company, outside party must procure Railroad Protective Liability Insurance in the following form;

      This coverage shall be written on an Occurrence Form with limits of not less than $5,000,000 per occurrence for Bodily Injury, Personal Injury and Physical Damage to Property, with an aggregate limit of not less than $10,000,000. The policy must name:

      Railroad Company name and its Parents
      Attn: Chris Garman
      17641 South Ashland Avenue
      Homewood, IL 60430
      708.332.6673 (office)
      Christopher.Garman@cn.ca

E. In the event the privileges provided herein to Applicant involve any work that could result in the discharge, spillage, disposal, release or escape of any Hazardous Material or petroleum product onto the Railroad Company's property, Applicant shall purchase and maintain in effect at all times during the term of this License a Contractor's Pollution Liability policy in an amount not less than two million dollars ($2,000,000) combined single limit (and with a deductible not to exceed $50,000) insuring Railroad against any and all damages, costs, liabilities and expenses resulting from on- or off-site bodily injury (including death to any person), on or off-site loss, damage or destruction of property (including that belonging to the parties hereto), and on-or off-site cleanup costs (including expenses incurred in the investigation, removal, remediation, neutralization, or immobilization of contaminated soils, surface water, groundwater or any other contamination) growing out of or incidental to any discharge, spillage, disposal, release, or escape of any Hazardous Material or petroleum product arising therefrom. For purposes of this Agreement, the term "Hazardous Material" shall include, without limit, any flammable explosives, radioactive materials, hazardous materials, hazardous wastes, hazardous or toxic substances, or related materials defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (42 U.S.C. §§ 9601, et seq.), the Hazardous Material Transportation Act, as amended (49 U.S.C. §§ 1801, et seq.), the Resource Conservation and Recovery Act, as amended (42 U.S.C. §§ 6901 et seq.), the Toxic Substances Control Act, as amended (15 U.S.C. §§ 2601, et seq.), similar laws or ordinances enacted by any state, county or municipality in which the Property is located, or in the regulations adopted and publications promulgated pursuant to any of the above, as such laws or regulations now exist or may exist in the future.

Applicant is required to advise Railroad Company by thirty (30) day advance written notice when any work to be performed under this License may require Pollution Liability Insurance pursuant to the previous paragraph.

F. All policies described above must include description of operations, Railroad Company milepost, highway or street name, city and state of location, project number, and Railroad Company contact person on the certificate.

2. Before commencing work, outside party shall deliver to Railroad Company a certificate of insurance evidencing the foregoing coverages and, if requested by Railroad Company, true and complete copies of the policies described above. If the policy is being issued in conjunction with, or as a result of, a city, county or state contract, the policy should be initially submitted to the respective city, county or state agency that will review it first and then forward it to Railroad Company.

3. Common Policy Provisions. Each policy described in paragraph 1, parts A through E above, must include the following provisions:

A. Each policy shall include a waiver by the insurer of any right of subrogation against any recovery by or on behalf of any insured.

B. Each policy shall provide for not less than thirty (30) days prior written notice to Railroad Company at the address listed above of cancellation of or any material change in that policy.

4. It is understood and agreed that the foregoing insurance coverage requirements, and outside party's compliance with those requirements, is not intended to, and shall not, relieve outside party from, or serve to limit, outside party's liability and indemnity obligations under the provisions herein.

5. Railroad Company shall have the right, from time to time, to revise the amount or form of insurance coverage required as circumstances or changing economic conditions may require. Railroad Company shall give outside party written notice of any such requested change at least thirty (30) days before the date of expiration of the then-existing policy or policies, outside party agrees to, and shall, thereupon provide Railroad Company with such revised policy or policies.

6. Insurance required of SUBCONTRACTOR:

   A. If a SUBCONTRACTOR is to be employed by outside party to perform work on Railroad Company under or by the permission for occupancy granted to outside party by Railroad Company, before commencing work, the SUBCONTRACTOR shall provide and thereafter maintain all of the insurance described in paragraph 1, parts A through E, above, in the same forms and amounts as provided for above and subject to the other terms and conditions provided for in paragraphs 2 through 4 above.

   B. In the alternative, before the SUBCONTRACTOR commences work for outside party on Railroad Company, outside party may provide and thereafter maintain all of the insurance described in paragraph 1, parts A through E, above, in the same forms and amounts as provided for above and subject to the other terms and conditions provided for in paragraphs 2 through 5 above, provided that all such insurance names SUBCONTRACTOR as an additional insured and all such insurance provides coverage to all additional insureds, including Railroad Company, for any liability arising out of work performed by all other additional insureds, including SUBCONTRACTOR.

Is safety training required?

Prior to any entry onto Railroad Company's property, the employees and/or subcontractors of a Contractor, Grantee, Licensee, or Permittee shall determine by the guidelines hereinafter provided and by the work to be performed the level of safety training to be required.

All employees and/or subcontractors of a Contractor, Grantee, Licensee, or Permittee not hired by Railroad Company that will work on CN property are required to have minimum www.contractororientation.com.

   b. EXCEPTION: Railroad Company has exempted those it classifies as “Delivery Persons” from this training. This will include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

All employees and/or subcontractors of a Contractor, Grantee, Licensee, or Permittee hired by Railroad Company which will work on Railroad Company property are required to have minimum CN Safety and Security Awareness training, in addition to undergoing a background check. This training and background check must be obtained through the eRailSafe.com website. If not done before, the contractor must contact CN Special Agent James Conroy at 708-332-5947 or James.Conroy@cn.ca to be issued a vendor number prior to accessing the noted website. Minimum information required of of a Contractor, Grantee, Licensee, or Permittee and/or their contractor when contacting either Special Agent James Conroy or e-RailSafe is Name, Address, Telephone, Contact Person for State Projects, DOT Contract Number, and the AAR/DOT Number. This training is good for a period of two years.

   c. EXCEPTION: Railroad Company has exempted those employees of contractors providing paving services at a road crossing under construction or repair from this requirement.

   d. EXCEPTION: Railroad Company has exempted those it classifies as “Delivery Persons” from this training. This will include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

All employees and/or subcontractors of a Contractor, Grantee, Licensee, or Permittee hired by Railroad Company, whose duties include and who are engaged in the inspection, construction, maintenance, or repair of railroad track, bridges, roadway, signal and communication systems, roadway facilities, or roadway machinery that will work foul of or have the potential to foul a live track are considered Roadway Workers under FRA regulations and CN Policy. They must complete the On-Track Safety Training course approved by Railroad Company and provided by R.R. Safety – AMR, P.O. Box 75, Lomira, WI 53048, telephone (920) 517-1677, email rrsafetytraining@yahoo.com. This training must be repeated at least once each calendar year.

e. EXCEPTION: Railroad Company has exempted those employees of contractors providing paving services at a road crossing under construction or repair from this requirement.

f. EXCEPTION: Railroad Company has exempted those it classifies as "Delivery Persons" from this training. This will include contractors such as UPS, FedEx, trucking companies, etc. who merely access the property to supply materials or equipment.

g. All the employees and/or subcontractors of a Contractor, Grantee, Licensee, or Permittee who will operate on-track machinery or those who will provide protection for other employees and/or subcontractors of a Contractor, Grantee, Licensee, or Permittee must also be trained on CN US Operating Rules pertaining to their duties. They must take and pass the required examination. This training is good for a period of two years.

h. "Potential to foul a live track" is considered, at a minimum, to be working within twenty-five (25) feet of the track; or as otherwise to be determined by CN Design & Construction Department.

The employees, subcontractors, and/or agents of the Licensee and/or its contractor shall qualify for, and make available for inspection to Railroad Company's employees or other authorized personnel at all times while on Railroad Company property, a photo identification issued by www.e-railsafe.com, along with at least one other government-issued form of identification. Licensee and/or their contractor shall bear all costs of compliance with the requirements of this Section. Railroad Company reserves the right to bar any of employees or agents of a Contractor, Grantee, Licensee, or Permittee and/or their contractor from Railroad Company's property at any time for any reason.

What are the flagging protection rates?

Flagging protection Rates:

Basic rate - 8 hour minimum = $1,000.00 – Monday thru Friday regular business hours

Overtime rate - hours in excess of 8 hours = $150.00/hr non regular business hours

Weekend or holiday rate = $150.00 per hour with a 8 hour minimum or $1,200.00

Email the above back to Christopher.garman@cn.ca

Revised 03-15-2013

MAINTENANCE OF ROADWAYS
Effective: September 30, 1985
Revised: November 1, 1996

Beginning on the date that work begins on this project, the Contractor shall assume responsibility for normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance shall include all repair work deemed necessary by the Engineer, but shall not include snow removal operations. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

If items of work have not been provided in the contract, or otherwise specified for payment, such items, including the accompanying traffic control and protection required by the Engineer, will be paid for in accordance with Article 109.04 of the Standard Specifications.

TRAFFIC CONTROL PLAN

Traffic Control shall be according to the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and Highway Standards contained in the plans, and the Special Provisions contained herein.

Special attention is called to Article 107.09 of the Standard Specifications and the following Highway Standards, Details, Quality Standard for Work Zone Traffic Control Devices, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

The Contractor shall contact the District One Traffic Control Supervisor at (847) 705-4470 a minimum of 72 hours in advance of beginning work.

STANDARDS: 701101, 701106, 701201, 701301, 701311, 701400, 701401, 701406, 701411, 701421, 701422, 701423, 701426, 701427, 701428, 701446, 701501, 701601, 701801, 701901, 704001 and 780001

DETAILS: Maintenance of Traffic – General Notes, Narrative, Typical Sections, Stages 1A, 1B, 2A-1, 2A-2, 2B-1 and 2B-2, and TC-08, TC-09, TC-10, TC-11, TC-12, TC-16, TC-17, TC-18, TC-21, TC-22, TC-24, and TC-27.

SPECIAL PROVISIONS:

Traffic Control Plan,
Maintenance of Roadways,
Staging and Interchange Restrictions,
Girder Erection Information and Restrictions,
Traffic Control and Protection (Special),
Keeping the Expressway Open to Traffic,
Failure to Open Traffic Lanes to Traffic,
Traffic Control and Protection (Expressways),
Traffic Control Surveillance, Expressways,
Temporary Information Signing,
Traffic Control for Work Zone Areas,
Road Construction Reporting and Signing for Vehicle Width Restrictions
Public Convenience and Safety (D-1)
Pavement Marking Blackout Tape (BDE),
Pavement Patching (BDE),
Speed Display Trailer (BDE),
Traffic Control Setup and Removal Freeway/Expressway (BDE),
Work Zone Public Information Signs (BDE Recurring SP #24),
Pavement Marking Removal (BDE Recurring SP #33)

STAGING AND INTERCHANGE RESTRICTIONS

Prior to the actual beginning and completion of the various stages of construction and traffic protection, the Contractor will be required to provide lane closures and barricade systems, for preparation work such as pavement marking removal, temporary lane marking, placing temporary concrete barrier, relocating existing guardrail, etc. These lane closures and barricade systems, including barricades, drums, cones, lights, signs, flaggers etc. shall be provided in accordance with details in the plans and these Special Provisions and as approved by the Engineer. The cost of this work will not be paid for separately but shall be considered included in the contract lump sum price for **TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS).**

LANE AND RAMP CLOSURES/RESTRICTIONS

Prior to and after stage construction, temporary closures of I-55 and US 41 (Lake Shore Drive) will only be permitted at night during the allowable hours as listed below and in the Special Provision “Keeping the Expressway Open to Traffic”. These hours also apply to temporary closures of the ramps, which are shown as open on the Maintenance of Traffic plan sheets.

For all ramp closures the Contractor shall furnish and install signage per District Detail TC-08, as directed by the Engineer.

The Contractor shall coordinate the work such that no two (2) adjacent entrance or exit ramps in one direction of the expressway are closed at the same time. The closing of ramps, which are used as the detour route for other roadways or ramps, is prohibited. Should the Contractor fail to completely open, and keep open, the ramps to traffic in accordance with the above limitations, the Contractor shall be liable to the Department for liquidated damages as noted under the Special Provision, "Failure to Open Traffic Lanes to Traffic".

Special Lane and Ramp Closure Restrictions

The Contractor will be permitted to close the following lanes and/or ramps for extended time periods as noted below:

Northbound Lake Shore Drive:

1. The Contractor will be permitted to close Northbound Lake Shore Drive for Stage 1B girder erection associated with Span 17W of Unit 2 of proposed Ramp NW, SN 016-1505, during the low traffic volume hours of 1:00 A.M. to 5:00 A.M. Monday thru Friday and from 1:00 A.M. to 7:00 A.M. on Sunday, as approved by the Engineer.
2. The Contractor will be permitted up to five (5) nightly lane closures along Northbound Lake Shore Drive for girder erection.
3. The temporary detour for Northbound Lake Shore Drive shall follow the route outlined in the Plans.

Southbound Lake Shore Drive and Ramp EN:

1. The Contractor will be permitted to close Southbound Lake Shore Drive and Ramp EN carrying Northbound I-55 traffic to Northbound Lake Shore Drive during the Stage 1B girder erection associated with Span 16W of Unit 2 of proposed Ramp NW, SN 016-1505, during the low traffic volume hours of 1:00 A.M. to 5:00 A.M. Monday thru Friday and from 1:00 A.M. to 7:00 A.M. on Sunday, as approved by the Engineer.
2. The Contractor will be permitted up to five (5) nightly lane closures along Southbound Lake Shore Drive and Ramp EN for girder erection.
3. The temporary detour for Southbound Lake Shore Drive and Ramp EN shall follow the route outlined in the Plans.

Southbound I-55 and Ramp SW:

1. The Contractor will be permitted to close Lanes 2 and 3 of Southbound I-55 and Ramp SW during the Stage 2B girder erection associated with proposed SB I-55, SN 016-1501, and Units 1 and 2 of proposed Ramp SW, SN 016-1504, during the low traffic volume hours of 1:00 A.M. to 5:00 A.M. Monday thru Friday and from 1:00 A.M. to 7:00 A.M. on Sunday, as approved by the Engineer.
2. The Contractor will be permitted up to ten (10) nightly lane closures of Lanes 2 and 3 of Southbound I-55 and Ramp SW for girder erection.
3. The temporary detour for Southbound I-55 and Ramp SW shall follow the route outlined in the Plans. Lane 1 of Southbound I-55 must remain open to traffic to facilitate the temporary detour route.

Ramp NW:

1. The Contractor will be permitted to close Ramp NW during the transition from Stage 1B to Stage 2A to facilitate the removal of the west wall of the vaulted terminal structure near the abutment and the shifting of traffic from the east side of the existing structure to the west side of the proposed Ramp NW structure, SN 016-1505, during the low traffic volume hours of 1:00 A.M. to 5:00 A.M. Monday thru Friday and from 1:00 A.M. to 7:00 A.M. on Sunday, as approved by the Engineer.
2. The Contractor will be permitted up to four (4) nightly lane closures along Ramp NW for demolition of the vaulted terminal structure and transition of traffic control between stages.
3. The temporary detour for Ramp NW shall follow the route outlined in the Plans.

The proposed detour routes as shown in the suggested stages of construction and traffic control plans shall be included in the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL).

Non-Permitted Weekends

Special closures along I-55, Lake Shore Drive and the interchange ramps will not be allowed during the holiday periods stated in Article 107.09 and amended by PUBLIC CONVENIENCE AND SAFETY (D-1) and the weekends containing the additional following events or holidays:

a. Taste of Chicago
b. Chicago Air and Water Show
c. Chicago Marathon
d. Chicago Jazz Festival
e. Chicago Blues Festival
f. Chicago St. Patrick's Day Parade
g. The Wednesday before Thanksgiving Day through the Monday following Thanksgiving
h. Easter Sunday
i. Gospel Fest
j. Chicago Bears Home Games
k. Lollapalooza
l. Pride Parade
m. Other events as dictated by the Engineer, local agencies, the Chicago Park District or the City of Chicago

The Contractor shall submit to the Department four (4) weeks ahead of time, in writing, the starting date for each of the extended ramp and/or lane closures. Approval from the Department is required prior to closing the ramp and/or lanes. Should the Contractor fail to complete the work and reopen the ramp to traffic within the allowable time limit, the Contractor shall be liable to the Department for liquidated damages as noted under FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC

Metra and IC/CN Railroad Restrictions

The Contractor will be allowed track closures as approved by Metra and the CN/Illinois Central Railway, and in accordance with the railroad right of entry agreements.

1. Metra Track Closures: Metra will allow a full four track closure from 1:00 A.M. to 4:00 A.M Monday thru Saturday and from 1:00 A.M. to 5:00 A.M on Sundays. One track must remain open until approximately 1:45 A.M. each day to allow the last train to arrive into the Millennium Park Station for the morning commute. One track must be open by 4 A.M. The Metra Electric District Track Closure Schedule has been shown in the Plans for reference only and is subject to change.

2. Protection of Metra Catenary Wires: The catenary wires are highly sensitive and must be protected at all times during construction. After de-energizing the catenary lines, rubber hoses and/or insulating blankets must be installed to protect these lines. Work over the Metra tracks can only commence once the track is shutdown and the catenary lines are de-energized, and rubber hoses/protective blankets have been installed by Metra or their forces.

3. CN/IC Railway and Amtrak Track Closures: The CN/IC Railway operates numerous freight trains through the project area. These trains do not operate on an established schedule, and close coordination with the railroad will be required to establish track closure times as approved by the railroad. Amtrak operates six trains daily along the CN tracks including service on the City of New Orleans, Illini and Saluki routes. The Contractor shall coordinate track closures with the CN/IC Railway and Amtrak to minimize disruption to track service.

Special Event Coordination and Staging

The Contractor will coordinate the proposed construction staging and sequence of construction operations with the Engineer to present an effective and timely schedule for successful completion of the project while maintaining access and minimizing disruptions to the daily operations and special event schedules of the adjacent developments. The adjacent developments include but are not limited to McCormick Place, Mercy Hospital and Medical Center, the Chicago Park District, Burnham Park, Soldier Field, and the Museum Campus. No additional compensation will be allowed the Contractor for the above requirements, for any delays or inconvenience resulting from the activities of the adjacent developments.

1. McCormick Place: Vehicular access to the McCormick Place Busway, Donnelly Drive, 25th Street, Mines Drive, Mc8th Drive, Moe Drive and Fort Dearborn Drive must be maintained at all times. The Contractor will be allowed a maximum closure of half of the McCormick Place Busway at a time. While the Southbound exit of the Busway is closed to accommodate the construction of proposed Pier 5W and the demolition of existing Piers W12 and W13, the Contractor must provide flaggers and the appropriate traffic control measures to allow two-way traffic along the Northbound entrance to the Busway from 25th Street. The South Entrance of Parking Lot A via the I-55 Turnaround near Martin Luther King Jr. Drive and the South Exit from Parking Lot A with access to I-55 South and 24th Place from Parking Lot A must be maintained at all times. All short duration closures to be coordinated with McCormick Place in advance and approved by the Engineer. For all short duration roadway closures, temporary access or alternate routes must be provided with headway of no less than 16 feet in width.

   The 24th Street Parking Lot will be closed during construction and available to the Contractor to assist in performing his/her Work, staging his/her operations, and/or storing his/her material and/or equipment. McCormick Place Parking Lot B to the south of Mc8th Drive will remain open to McCormick Place staff and visitors. The Contractor is restricted from storing equipment or material in Parking Lot B without written approval by McCormick Place. Building access to the McCormick Place South Building entrance must be maintained at all times. The Contractor shall provide pedestrian protection such as but not limited to a protected walkway along Martin Luther King Jr. Drive, Donnelly Drive, Mines Drive and Moe Drive, and shall submit plans and details for pedestrian protection including scaffolding or other protective measures for review and approval by the Engineer. While working adjacent to McCormick Place, the Contractor shall exercise care to protect the McCormick Place buildings and properties from damage and provide a safe environment for staff and operations within the project area.

2. Special Event Staging - Ramp SW: At the direction of the Engineer and in coordination with the City of Chicago, OEMC, the Chicago Park District and Soldier Field, the Contractor shall implement special event traffic control measures as shown in the Plans to assist in safely and efficiently allowing traffic to exit from Soldier Field and the Museum Campus from the 18th Street southbound entrance ramp via Ramp SW and Southbound I-55 during Stage 1B. The stage removal limits of Ramp SW shall be set such that two lanes of traffic can be provided on event days. The Contractor shall relocate traffic barricades, cover signs in conflict with the event day staging and install the necessary traffic control measures to temporarily open two lanes of traffic along Ramp SW. Temporary pavement marking will not be installed to channelize traffic into two lanes on the ramp. Channelization for two lanes of traffic will be communicated via signage and changeable message signs. The Contract includes up to twenty (20) special events in which the special event traffic control measures may be implemented.

Coordination efforts with adjacent developments, providing the required traffic control to maintain access to the adjacent developments, pedestrian protection and special event staging shall be included in the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL).

SUGGESTED TRAFFIC STAGING SEQUENCE

The following is a brief description of the traffic staging, which will be required from the Contractor during the reconstruction of the expressway. The following description shall be correlated with the Maintenance of Traffic (MOT) details located in the Plans and these Special Provisions.

This suggested sequence of operations and summary for Traffic Staging does not, nor is it intended to, depict all the work that will be required by the Contractor for the maintenance of traffic during this Contract. This summary is given as an aid and guide for the Contractor's use to establish the necessary guidelines to insure a safe and as smooth as possible traffic operation during the duration of the Contract.

Stage 1A

- Remove west half of tangent portion of existing Ramp NW (S.N. 016-1048).
- Initiate installation of drilled shaft foundations and construction of Piers and Spans 13W through 20W (Units 1 to 3) and the west half of Spans 21W and 22W (Unit 4) of proposed Ramp NW (S.N. 016-1505).
- Construct west half of proposed Ramp NW Retaining Wall (S.N. 016-0746).
- Construct temporary pavement at south approach of Ramp NW for use in Stage 2A.
- Furnish and install proposed IDOT lighting controller 'A', main distribution panel (MDP) and new electric utility service to MDP.
- Install temporary lighting circuits from proposed IDOT lighting controller 'A' to existing NB I-55 lighting units to remain.
- Install the temporary power feed from proposed MDP to existing IDOT DMS sign to remain.
- Remove existing CDOT lighting units and foundations along Lake Shore Drive to facilitate work zone entry and exit openings. Install temporary CDOT lighting along Lake Shore Drive to replace the removed lighting units.
- Install temporary communication cable from Lake Shore Drive to median junction box at DMS-7. Maintain existing 48 SMFO cable from median junction box to DMS -7 through temporary aerial connection.

Stage 1B

- Remove south and east portion of existing Ramp SW (S.N. 016-1052).
- Remove south half of existing SB I-55 Structure (S.N. 016-1055).
- Continue construction of Spans 13W through 20W (Units 1 TO 3) and the west half of Spans 21W and 22W (Unit 4) of proposed Ramp NW (S.N. 016-1505).
- Continue construction west portion of proposed Ramp NW Retaining Wall (S.N. 016-0746).
- Construct south portion of Spans 6W through 8W (Unit 1) and Spans 10W through 12W (Unit 2) of proposed Ramp SW (S.N. 016-1504).
- Construct south portion of Spans 1W through 5W of proposed SB I-55 structure (S.N. 016-1501).
- Construct south half of proposed SB I-55 Retaining Wall (S.N. 016-0741).
- Remove and salvage portion of existing IDOT I-55 Turn-around ramp underpass lighting system and existing CDOT MLK Drive underpass lighting system attached to underside of SB I-55 structure.

Stage 2A-1 and Stage 2A-1

- Remove existing Ramp NW (S.N. 016-1048).
- Continue construction of Spans 21W and 22W (Unit 4) of proposed Ramp NW (S.N. 016-1505) and the east half of proposed retaining wall (S.N. 016-0746).
- Construct center portion of Spans 6W through 8W (Unit 1), Span 9W (Unit 2) and west portion of Spans 10W through 12W of proposed Ramp SW (S.N. 016-1504).
- Construct center portion of west approach and pavement of proposed SB I-55.
- Construct east portion of proposed Ramp SW Retaining Wall (S.N. 016-0745).
- Stage 2A-1: Construct permanent pavement along west side of SB Lake Shore Drive and Ramp SW north of the 23rd Street Bridge.
- Stage 2A-2: Construct permanent pavement along east side of Ramp SW and SB Lake Shore Drive gore area.
- Install the temporary IDOT lighting system along the south side of SB I-55.
- Install the temporary IDOT lighting system along the west side of Ramp SW.

Stage 2B-1 and Stage 2B-2

- Continue removal of existing Ramp NW (S.N. 016-1048). Remove temporary pavement.
- Remove remaining north and west portion of existing Ramp SW (S.N. 016-1052).
- Remove remaining north portion of existing SB I-55 structure (S.N. 016-1055).
- Stage 2B-1: Complete west portion of proposed Ramp SW Retaining Wall (S.N. 016-0745).
- Stage 2B-1: Install permanent sheet piling north of proposed retaining wall (S.N. 016-0745).
- Complete remaining north portion of Spans 6W through 8W (Unit 1) of proposed Ramp SW (S.N. 016-1504).
- Complete remaining north portion of Spans 1W through 5W of SB I-55 structure (S.N. 016-1501) and the north portion of proposed retaining wall (S.N. 016-0741).
- Complete all site grading, drainage, lighting, ITS, landscaping and restoration activities.

GIRDER ERECTION INFORMATION AND RESTRICTIONS

This Special Provision defines available work areas and lane and ramp closures allowed for the girder erection of Ramp NW (SN 016-1505), Ramp SW (SN 016-1504) and SB I-55 (SN 016-1501). Closures needed to perform additional Work other than described within this Special Provision will be governed by the “Staging and Interchange Restrictions” and “Keeping the Expressway Open to Traffic” Special Provisions.

AVAILABLE AREAS

Several suggested available areas for Contractor use have been shown in the Suggested Stages of Construction and Traffic Control Plan sheets. These suggested available areas have been shown to assist the Contractor in performing his/her Work, staging his/her operations, and/or storing his/her material and/or equipment. The Contractor must submit an Erection Plan to the Engineer for approval as outlined in the "Erection of Complex Steel Structures" Special Provision. This Work Plan shall also include an outline and schedule of lane, ramp and full expressway closures requested before, after and during girder erection as well as the possible use of proposed Staging Areas.

Additional signing, site grading, excavation, removals, placement of concrete, aggregate, asphalt, pavement markings, temporary concrete barriers, pads and/or mats for equipment, removal of temporary items, restoration and repair to pre-condition condition and any other items related to the Contractor's preparation and use of work areas on or around the project location will not be paid for separately, but will be included in the cost of TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS) or FURNISHING AND ERECTING STRUCTURAL STEEL.

Special Local Road Restrictions

All local road closures or restrictions requested by the Contractor are subject to approval by the City of Chicago and the Department as identified in "Staging and Interchange Restrictions". Any maintenance of traffic required on local roads, if required for the Contractor's means and methods for girder erection, is included in the cost of TRAFFIC CONTROL AND PROTECTION (SPECIAL).

The Contractor shall make provisions during girder erection operation for emergency vehicle access on all closed roadways by maintaining one fourteen (14) foot wide lane. The Contractor shall make the lane safe and passable to emergency responders as soon as notified by the Engineer.

Additional signing, site grading, excavation, removals, placement of concrete, aggregate, asphalt, pavement markings, temporary concrete barriers, pads and/or mats for equipment, removal of temporary items, restoration and repair to pre-condition condition and any other incidental items related to the Contractor's preparation and use of work areas on or around the project location will not be paid for separately, but will be included in the cost of TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS) or FURNISHING AND ERECTING STRUCTURAL STEEL.

The Contractor must submit an Erection Plan to the Engineer for approval as outlined in the "Erection of Complex Steel Structures" Special Provision. This Work Plan shall also include an outline and schedule of lane, ramp and full expressway closures requested before, after and during girder erection as well as the possible use of proposed Staging Areas. The erection plans and procedures shall be submitted to the Engineer for review and acceptance prior to starting the work. The plan shall be submitted a minimum of eight (8) weeks prior to the planned mobilization efforts for erection tasks.

Any necessary permits or additional costs associated with the proposed request for closures for girder erection shall be at the Contractor's expense. The preparation, maintenance and restoration of the closure is at the Contractor's expense.

The scheduled dates for all requested local street, ramp and expressway closures will be subject to Department approval. A thirty (30) day advance notice is required prior to the requested closure date. Scheduled closures shall be planned as far in advance as possible. The Department makes no guarantees that the requested dates can be granted.

WORK AND STAGING AREA PLAN

The Contractor must submit an Erection Plan to the Engineer for approval as outlined in the "Erection of Complex Steel Structures" Special Provision. Additionally, the Contractor must prepare a detailed plan that describes the anticipated operation to execute the girder erection in the areas described above. The plan shall include, but is not limited to, the following:

a. Site preparation plan
b. Material delivery schedule and sequence
c. Material storage requirements and locations
d. Equipment to be used during the girder erection operations
e. Equipment storage and staging requirements and locations
f. Schedule for lane restrictions, ramp restrictions Interstate and Ramp closures and other major traffic control as described above
g. Detailed erection schedule
h. Risk assessment and mitigation strategies
i. Communications plan

Basis of Payment. This work will not be paid for separately. All temporary and permanent work described herein and associated with the erection of the girders will be paid for within the applicable pay items according to Article 505.13 of the Standard Specifications.

TRAFFIC CONTROL AND PROTECTION (SPECIAL)

Specific traffic control plan details and Special Provisions have been prepared for this contract. This work shall include all labor, materials, transportation, handling and incidental work necessary to furnish, install, maintain and remove all traffic control devices required as indicated in the plans and as approved by the Engineer.

When traffic is to be directed over a detour route or alternate route, the Contractor shall furnish, erect, maintain and remove all applicable traffic control devices along the detour route or alternate route according to the details shown in the plans.

Method of Measurement: All traffic control (except Traffic Control and Protection (Expressways)) and temporary pavement markings) indicated on the traffic control plan details and specified in the Special Provisions will be measured for payment on a lump sum basis.

Basis of Payment: All traffic control and protection will be paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (SPECIAL).

Temporary pavement markings will be paid for separately unless shown on a Standard.

KEEPING THE EXPRESSWAY OPEN TO TRAFFIC

Whenever work is in progress on or adjacent to an expressway, the Contractor shall provide the necessary traffic control devices to warn the public and to delineate the work zone as required in these Special Provisions, the Standard Specifications, the State Standards and the District Freeway details. All Contractors' personnel shall be limited to these barricaded work zones and shall not cross the expressway.

The Contractor shall request and gain approval from the Illinois Department of Transportation's Expressway Traffic Operations Engineer at www.idotlcs.com twenty-four (24) hours in advance of all daily lane, ramp and shoulder closures and one week in advance of all permanent and weekend closures on all Freeways and/or Expressways in District One. This advance notification is calculated based on workweek of Monday through Friday and shall not include weekends or Holidays.

LOCATION: I-55: US 41 (Lake Shore Drive) to I-90/94 (Dan Ryan Expressway)

WEEK NIGHT	TYPE OF CLOSURE	ALLOWABLE LANE CLOSURE HOURS		
Sunday-Thursday	1-Lane	10:00 PM	to	5:00 AM
	2-Lane	11:59 PM	to	5:00 AM
Friday	1-Lane	11:00 PM (Fri)	to	6:00 AM (Sat)
	2-Lane	11:59 PM (Fri)	to	6:00 AM (Sat)
Saturday	1-Lane	10:00 PM (Sat)	to	9:00 AM (Sun)
	2-Lane	11:59 PM (Sat)	to	9:00 AM (Sun)

In addition to the hours noted above, temporary shoulder and partial ramp closures are allowed weekdays between 9:00 A.M. and 3:00 P.M. and between 7:00 P.M. and 5:00 A.M.

Narrow lanes and permanent shoulder closures will not be allowed between Dec. 1st and April 1st.

Full Expressway Closures will only be permitted for a maximum of 15 minutes at a time during the low traffic volume hours of 1:00 A.M. to 5:00 A.M. Monday thru Friday and from 1:00 A.M. to 7:00 A.M. on Sunday. During Full Expressway Closures, the Contractor will be required to close off all lanes except one, using Freeway Standard Closures. Police forces should be notified and requested to close off the remaining lane at which time the work item may be removed or set in place. The District One Traffic Operations Department **shall be** notified (847-705-4151) at least 3 working days (weekends and holidays DO NOT count into this 72 hours notification) in advance of the proposed road closure and will coordinate the closure operations with police forces. Liquidated Damages as specified in the Failure to Open Traffic Lanes to Traffic for One lane or ramp blocked shall be assessed to the Contract for every 15 minutes beyond the initial 15 minutes all lanes are blocked.

Temporary ramp closures for service interchanges will only be permitted at night during the restricted hours listed for temporary one-lane closures within the project limits. However, no two (2) adjacent entrance or exit ramps in one direction of the expressway shall be closed at the same time.

I-55 and Lake Shore Drive (system interchange) full ramp closures for two lane ramps will not be permitted with the exception of the Ramp SW and Ramp EN closures specified in the Special Lane and Ramp Closure Restrictions section of the Staging and Interchange Restrictions Special Provision. The interchange ramps include those connecting both Lake Shore Drive to SB I-55 and NB I-55 to Lake Shore Drive. Partial ramp closures of system ramps may be allowed during the 1-lane closure hours above. System ramp full closures for single lane ramps are only permitted for maximum of four (4) hours:

- Between the hours of 1:00 AM and 5:00 AM on Monday thru Friday
- Between the hours of 1:00 AM and 6:00 AM on Saturday, and
- Between the hours of 1:00 AM and 7:00 AM on Sunday.

The Contractor shall furnish and install large (48”x48”) “DETOUR with arrow” signs as directed by the Engineer for all system ramp closures. In addition, one portable changeable message sign will be required to be placed in advance of the ramp closure. The cost of these signs and PCMS board shall be included in the cost of traffic control and protection (6 static signs maximum per closure).

All stage changes requiring the stopping and/or the pacing of traffic shall take place during the allowable hours for Full Expressway Closures and shall be approved by the Department.
All daily lane closures shall be removed during adverse weather conditions such as rain, snow, and/or fog and as determined by the Engineer.

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

All lane closure signs shall not be erected any earlier than one-half (1/2) hour before the starting hours listed above. Also, these signs should be taken down within one-half (1/2) hour after the closure is removed.

The Contractor will be required to cooperate with all other contractors when erecting lane closures on the expressway. All lane closures (includes the taper lengths) without a three (3) mile gap between each other, in one direction of the expressway, shall be on the same side of the pavement. Lane closures on the same side of the pavement with a half (1/2) mile or less gap between the end of one work zone and the start of taper of next work zone should be connected. The maximum length of any lane closure on the project and combined with any adjacent projects shall be three (3) miles. Gaps between successive permanent lane closures shall be no less than two (2) miles in length.

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

FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC

Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified under the Special Provisions for "Keeping the Expressway Open to Traffic", the Contractor shall be liable to the Department for the amount of:

I-55, US 41 and Ramps:	All Stages One lane or ramp blocked = $1,700 /15 min. Two lanes blocked = $3,500 /15 min.

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

TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS)
Effective: March 8, 1996
Revised: February 13, 2014

Description. This work shall include furnishing, installing, maintaining, replacing, relocating, and removing all traffic control devices used for the purpose of regulating, warning, or directing traffic. Traffic control and protection shall be provided as called for in the plans, applicable Highway Standards, District One Expressway details, Standards and Supplemental Specifications, these Special Provisions, or as directed by the Engineer.

General. 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 on the expressway through the construction zone. The Contractor shall arrange his operations to keep the closing of lanes and/or ramps to a minimum.

The Contractor shall be responsible for the proper location, installation, and arrangement of all traffic control devices. Special attention shall be given to existing warning signs and overhead guide signs during all construction operations. Warning signs and existing guide signs with down arrows shall be kept consistent with the barricade placement at all times. The Contractor shall immediately remove, completely cover, or turn from the motorist's view all signs which are inconsistent with lane assignment patterns.

The Contractor shall coordinate all traffic control work on this project with adjoining or overlapping projects, including barricade placement necessary to provide a uniform traffic detour pattern. When directed by the Engineer, the Contractor shall remove all traffic control devices that were furnished, installed, or maintained by him under this contract, and such devices shall remain the property of the Contractor. All traffic control devices shall remain in place until specific authorization for relocation or removal is received from the Engineer.

Additional requirements for traffic control devices shall be as follows.

(a) Traffic Control Setup and Removal. The setting and removal of barricades for the taper portion of a lane closure shall be done under the protection of a vehicle with a truck/trailer mounted attenuator and arrow board per State Standard 701428 and the Traffic Control Setup and Removal Freeway/Expressway BDE Special Provision. Failure to meet this requirement will be subject to a Traffic Control Deficiency. The deficiency will be calculated as outlined in Article 105.03 of the Standard Specifications. Truck/trailer mounted attenuators shall comply with Article 1106.02(g) or shall meet the requirements of NCHRP 350 Test Level 3 with vehicles used in accordance with manufacturer’s recommendations and requirements.

(b) Sign Requirements

(1) Sign Maintenance. 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. Throughout the duration of this project, all existing traffic signs shall be maintained by the Contractor. 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".

(2) Work Zone Speed Limit Signs. Work zone speed limit signs shall be installed as required in Article 701.14(b) and as shown in the plans and Highway Standards. Based upon the exiting posted speed limit, work zone speed limits shall be established and signed as follows.

a. Existing Speed Limit of 55mph or higher. The initial work zone speed limit assembly, located approximately 3200' before the closure, and shall be 55mph as shown in 701400. Additional work zone 45mph assemblies shall be used as required according to Article 701.14(b) and as shown in the Highway Standards and plans. WORK ZONE SPEED LIMIT 55 PHOTO ENFORCED assemblies may be omitted when this assembly would normally be placed within 1500 feet of the END WORK ZONE SPEED LIMIT sign.

b. Existing Speed Limit of 45mph. The advance 55mph work zone speed limit assembly shown in 701400 shall be replaced with a 45mph assembly. Additional work zone 45mph assemblies shall be used as required according to Article 701.14(b) and as shown in the Highway Standards and plans. WORK ZONE SPEED LIMIT 55 PHOTO ENFORCED assemblies shall be eliminated in all cases. END WORK ZONE SPEED LIMIT signs are required.

(3) Exit Signs. The exit gore signs as shown in Standard 701411 shall be a minimum size of 48 inch by 48 inch with 12 inch capital letters and a 20 inch arrow. EXIT OPEN AHEAD signs shown in Standard 701411 shall be a minimum size of 48 inch by 48 inch with 8 inch capital letters.

(4) Uneven Lanes Signs. The Contractor shall furnish and erect "UNEVEN LANES" signs (W8-11) on both sides of the expressway, at any time when the elevation difference between adjacent lanes open to traffic equals or exceeds one inch. Signs shall be placed 500' in advance of the drop-off, within 500' of every entrance, and a minimum of every mile.

(c) Drums/Barricades. Check barricades shall be placed in work areas perpendicular to traffic every 1000', one per lane and per shoulder, to prevent motorists from using work areas as a traveled way. Check barricades shall also be placed in advance of each open patch, or excavation, or any other hazard in the work area, the first at the edge of the open traffic lane and the second centered in the closed lane. Check barricades, either Type I or II, or drums shall be equipped with a flashing light.

To provide sufficient lane widths (10' minimum) for traffic and also working room, the Contractor shall furnish and install vertical barricades with steady burn lights, in lieu of Type II or drums, along the cold milling and asphalt paving operations. The vertical barricades shall be placed at the same spacing as the drums.

(d) Vertical Barricades. Vertical barricades shall not be used in lane closure tapers, lane shifts, exit ramp gores, or staged construction projects lasting more than 12 hours. Also, vertical barricades shall not be used as patch barricades or check barricades. Special attention shall be given, and ballast provided per manufacture's specification, to maintain the vertical barricades in an upright position and in proper alignment.

(e) Temporary Concrete Barrier Wall. Prismatic barrier wall reflectors shall be installed on both the face of the wall next to traffic, and the top of sections of the temporary concrete barrier wall as shown in Standard 704001. The color of these reflectors shall match the color of the edgelines (yellow on the left and crystal or white on the right). If the base of the temporary concrete barrier wall is 12 inches or less from the travel lane, then the lower slope of the wall shall also have a 6 inch wide temporary pavement marking edgeline (yellow on the left and white on the right).

(f) Full Expressway Closures. Full Expressway Closures will only be permitted for a maximum of 15 minutes during the allowable hours listed in the Keeping the Expressway Open to Traffic Special Provision. During Full Expressway Closures, the Contractor will be required to close off all lanes except one, using Freeway Standard Closures. The Contractor will be required to provide one changeable message sign to be placed at the direction of the Engineer. The sign shall display a message as directed by the Engineer. A Maintenance of Traffic Plan shall be submitted to the District One Traffic Operations Department Two Weeks in advance of the planned work. The Maintenance of Traffic Plan shall include, but not be limited to: lane and ramp closures, existing geometrics, and equipment and material location. The District One Traffic Operations Department shall be contacted (847-705-4151) at least 3 working days in advance of the proposed road closure and will coordinate the closure operation with police forces.

Method of Measurement. This item of work will be measured on a lump sum basis for furnishing, installing, maintaining, replacing, relocating, and removing traffic control devices required in the plans and these Special Provisions. Traffic control and protection required under Standards 701101, 701106, 701201, 701301, 701311, 701400, 701401, 701406, 701411, 701421, 701422, 701423, 701426, 701427, 701428, 701446, 701501, 701601, 701801, 701901, 704001, 780001 and District details TC-08, TC-09, TC-10, TC-11, TC-12, TC-16, TC-17, TC-18, TC-21, TC-22, TC-24, and TC-27 will be included with this item.

Basis of Payment.

(a) This work will be paid for at the contract lump sum price for TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS). This price shall be payment in full for all labor, materials, transportation, handling, and incidental work necessary to furnish, install, maintain, replace, relocate, and remove all Expressway traffic control devices required in the plans and specifications.

In the event the sum total value of all the work items for which traffic control and protection is required is increased or decreased by more than ten percent (10%), the contract bid price for TRAFFIC CONTROL AND PROTECTION (EXPRESSWAYS) will be adjusted as follows:

Adjusted contract price = .25P + .75P [1±(X-0.1)]

Where: "P" is the bid unit price for Traffic Control and Protection

Where: "X" = $\dfrac{\text{Difference between original and final sum total value of all work items for which traffic control and protection is required}}{\text{Original sum total value of all work items for which traffic control and protection is required.}}$

The value of the work items used in calculating the increase and decrease will include only items that have been added to or deducted from the contract under Article 104.02 of the Standard Specifications and only items which require use of Traffic Control and Protection.

(b) The Engineer may require additional traffic control be installed in accordance with standards and/or designs other than those included in the plans. In such cases, the standards and/or designs will be made available to the Contractor at least one week in advance of the change in traffic control. Payment for any additional traffic control required will be in accordance with Article 109.04 of the Standard Specifications.

(c) Revisions in the phasing of construction or maintenance operations, requested by the Contractor, may require traffic control to be installed in accordance with standards and/or designs other than those included in the plans. Revisions or modifications to the traffic control shown in the contract shall be submitted by the Contractor for approval by the Engineer. No additional payment will be made for a Contractor requested modification.

(d) Temporary concrete barrier wall will be measured and paid for according to Section 704.

(e) Impact attenuators, temporary bridge rail, and temporary rumble strips will be paid for separately.

(f) Temporary pavement markings shown on the Standard will be measured and paid for according to Section 703 and Section 780.

(g) All pavement marking removal will be measured and paid for according to Section 703 or Section 783.

(h) Temporary pavement marking on the lower slope of the temporary concrete barrier wall will be measured and paid for as TEMPORARY PAVEMENT MARKING, 6".

(i) All prismatic barrier wall reflectors will be measured and paid for according to the Recurring Special Provision Guardrail and Barrier Wall Delineation.

(j) The Changeable Message Sign required for Full Expressway Closures shall not be paid for separately.

TRAFFIC CONTROL SURVEILLANCE, EXPRESSWAYS
Effective: 10/25/95
Revised: 1/9/98

The contractor shall provide a person with a vehicle to survey, inspect and maintain all temporary traffic control devices when a lane is closed to traffic and when hazards are present adjacent to or within 10 foot of the edge of pavement for more than 24 hours.

The surveillance person is required to drive through the project, to inspect all temporary traffic control devices, to correct all traffic control deficiencies, if possible, or immediately contact someone else to make corrections and to assist with directing traffic until such corrections are made, at intervals not to exceed 4 hours. This person shall list every inspection on an inspection form, furnished by the Engineer, and shall return a completed form on the first working day after the inspections are made.

The Contractor shall supply a telephone staffed on a 24-hour-a-day basis to receive any notification of any deficiencies regarding traffic control and protection or receive any request for improving, correcting or modifying traffic control, installations or devices, including pavement markings. The Contractor shall dispatch additional men, materials and equipment as necessary to begin to correct, improve or modify the traffic control as directed, within one hour of notification by this surveillance person or by the Department. Upon completion of such corrections and/or revisions, the Contractor shall notify the Department's Communication Center at (847) 705-4612.

Method of Measurement: Traffic Control Surveillance will be measured on calendar day basis. One calendar day is equal to a minimum of six (6) inspections. The inspections shall start within 4 hours after the lane is closed to traffic or a hazard exists within 10 foot from the edge of pavement and shall end when the lane closure or hazard is removed.

Basis of Payment: Surveillance will be paid for at the contract unit price per calendar day or fraction thereof for TRAFFIC CONTROL SURVEILLANCE, EXPRESSWAYS. The price shall include all labor and equipment necessary to provide the required inspection and maintenance on the expressway and on all cross streets which are included in the project. The cost of the materials for the maintenance of traffic control devices shall be included in the traffic control pay items.

TEMPORARY INFORMATION SIGNING
Effective: November 13, 1996
Revised: January 02, 2007

Description. This work shall consist of furnishing, installing, maintaining, relocating for various states of construction and eventually removing temporary informational signs. This also includes the Advanced Warning Sign for use on arterial roads as described herein. These signs may be ground mounted, skid mounted, truss mounted, bridge mounted or overlaid sign panels which cover portions of existing signs.

Materials. Materials shall be according to the following Articles of Division 1000 - Materials:

	Item	Article/Section
(a)	Sign Base (Notes 1 & 2)	1090
(b)	Sign Face (Note 3)	1091
(c)	Sign Legends	1091
(d)	Sign Supports	1093
(e)	Overlay Panels (Note 4)	1090.02
Note 1	The Contractor may use 5/8 inch (16 mm) instead of 3/4 inch (19 mm) thick plywood.	
Note 2	Type A sheeting can be used on the plywood base.	
Note 3	All sign faces shall be Type A except all orange signs shall meet the requirements of Article 1106.01.	
Note 4	The overlay panels shall be 0.08 inch (2 mm) thick.	

GENERAL CONSTRUCTION REQUIREMENTS

Installation: The sign sizes and legend sizes shall be verified by the Contractor prior to fabrication.

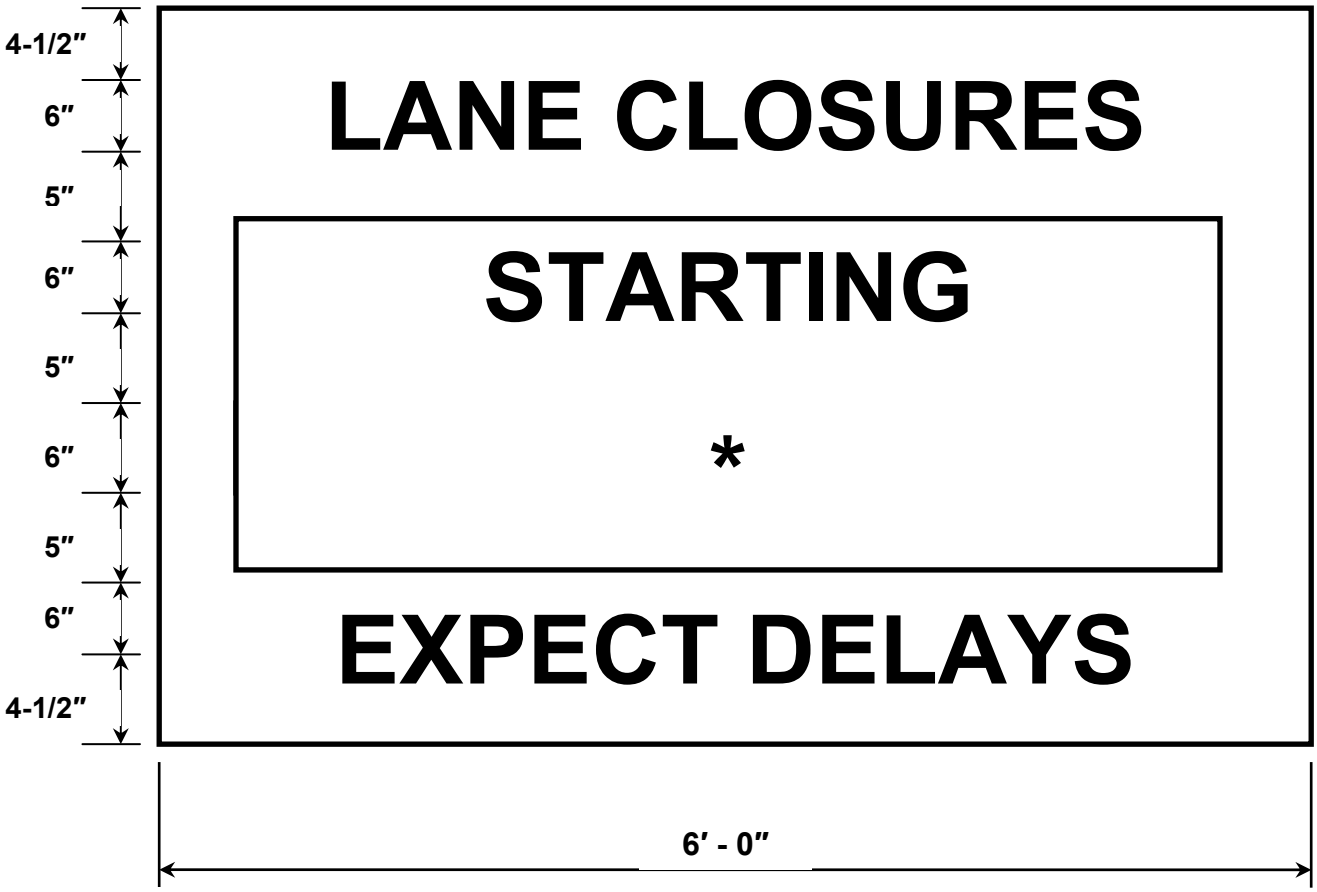
Signs which are placed along the roadway and/or within the construction zone shall be installed according to the requirements of Article 720.04. The signs shall be 7 ft. (2.1 m) above the near edge of the pavement and shall be a minimum of 2 ft. (600 mm) beyond the edge of pavement. A minimum of three (3) posts shall be used.

The attachment of temporary signs to existing sign structures or sign panels shall be approved by the Engineer. Any damage to the existing signs due to the Contractor's operations shall be repaired or signs replaced, as determined by the Engineer, at the Contractor's expense.

Signs which are placed on overhead bridge structures shall be fastened to the handrail with stainless steel bands. These signs shall rest on the concrete parapet where possible. The Contractor shall furnish mounting details for approval by the Engineer.

Method of Measurement: This work shall not be measured for payment.
All hardware, posts or skids, supports, bases for ground mounted signs, connections, which are required for mounting these signs will be included as part of this pay item.

Basis of Payment. This work shall be paid for at the contract until price per square foot for TEMPORARY INFORMATION SIGNING, which price shall be full compensation for all labor, equipment and materials required for performing the work as herein specified.



***Contractor shall provide overlay panel with the date for Start of lane closure. Signs shall be erected a minimum of one (1) week in advance of the start of the work. Overlay panel shall be removed soon after start of construction.**

ADVANCED WARNING SIGN DETAIL FOR ARTERIAL TRAFFIC

TRAFFIC CONTROL FOR WORK ZONE AREAS
Effective: 9/14/95
Revised: 1/1/07

Work zone entry and exit openings shall be established daily by the Contractor with the approval of the Engineer. All vehicles including cars and pickup trucks shall exit the work zone at the exit openings. All trucks shall enter the work zone at the entry openings. These openings shall be signed in accordance with the details shown elsewhere in the plans and shall be under flagger control during working hours.

The Contractor shall plan his trucking operations into and out of the work zone as well as on to and off the expressway to maintain adequate merging distance. Merging distances to cross all lanes of traffic shall be no less than 1/2 mile. This distance is the length from where the trucks enter the expressway to where the trucks enter the work zone. It is also the length from where the trucks exit the work zone to where the trucks exit the expressway. The stopping of expressway traffic to allow trucks to change lanes and/or cross the expressway is prohibited.

Failure to comply with the above requirements will result in a Traffic Control Deficiency charge. The deficiency charge will be calculated as outlined in Article 105.03 of the Standard Specifications. The Contractor will be assessed this daily charge for each day a deficiency is documented by the Engineer.

ROAD CONSTRUCTION REPORTING AND SIGNING FOR VEHICLE WIDTH RESTRICTIONS

Introduction

The intent of this policy is to provide uniform width restriction signing and reporting in order to reduce the chances of oversized vehicles, particularly those operating under blanket permits, from becoming entrapped in construction zones.

Construction/Maintenance Projects Requiring Over Size and Over Weight Restrictions

a) Closures of any roadway, Rail Road crossing, Interstate or Freeway Ramps

b) All road construction that restricts the actual measured opening to less than 17'-6".

c) Any construction zone with characteristics that have the potential of creating delays and/or potentially hazardous conditions such as roadways with a high traffic volume or unnecessary merging situations. Any other condition that the Engineer deems necessary to ensure safety should be listed.

Measuring with Restrictions

In order to ensure state-wide uniformity, the opening shall be measured as follows:

a) Two fixed structures – Measurement shall be made between the narrowest points of the fixed structures. Fixed structures may include but are not limited to bridge railing, concrete barrier, cable rail, or guard rail.

b) Fixed structure and non-fixed devices or equipment – Measurement shall be made between the two narrowest points of the fixed structure and non-fixed devices when such non-fixed devices cannot easily be moved to accommodate the overwidth load. Such devices or equipment may include snooper truckers, barricades/cones/drums placed to keep traffic away from open holes in the pavement, arrow boards, dynamic message signs, etc.

c) Construction near a fixed structure – Construction activities near a fixed structure may result in a reportable width restriction where is insufficient room for an overwidth load to safely move onto the structure

Reporting

In order to provide timely information to truckers, all road construction or maintenance activities which result in measured openings for traffic of less than 17'-6" or which involve the closure of any roadway, railroad grade crossing or freeway ramp are to be reported to the Central Bureau of Operations at least 21 days in advance of the date of the restriction start date which may be different from the start date of the project itself. The reporting is to be on form OPER 2410. Note on the form if the restrictions will only be in effect during the time period of ½ hour before sunrise to ½ after sunset Monday through Friday and ½ hour before sunrise to noon on Saturday, or if they will be in effect at all times.

When using form OPER 2410, the restriction location on interstate routes or other freeways should be identified with mileposts and/or a distance from an identifiable location, such as an intersection of two routes. If the restriction is located a structure, identify the feature crossed. The location of restrictions on conventional highways should be identified with a distance from an identifiable locations, such as an intersection of two routes and the From Mile/To Mile fields left blank. If construction is located at a structure, identify the feature crossed. If there are multiple structures with different width restriction dimensions, each structure and restriction must be listed separately. This can be accomplished on the same form.

If the construction and/or width restriction start/stop dates change after being submitted, a revised OPER 2410 must be submitted.

The width restriction dimension to be listed on form OPER 2410 and used on the width restriction signing should be the actual measured opening less 18". For example if the actual measured opening is 16' 3", the restriction dimension is to be reported and signed at 14' 9".

A greater deduction than 18" may be taken if, in the opinion of the Engineer, it is warranted due to unusual geometrics or other operational considerations. The dimension listed on form OPER 2410 and used on the signing should reflect the greater deduction.

After completion, the form is to be e-mailed to the **IDOT ROAD INFO** mailbox.

Emergencies or any unusual construction restrictions or closures should be reported immediately.

a) During Normal Business Hours: Call (217) 782-8551. Submittal of OPER 2410 by e-mail to **IDOT ROAD INFO** is still required.

b) After Normal Business Hours/ Weekends/ Holidays: Call the Communications Center (Station 1) at (217) 782-2937. After calling Station 1, submit OPER 2410 by e-mail to **IDOT ROAD INFO** and fax a copy to the Communications Center at (217) 782-1927.

Signing

Signing shall be provided whenever the actual measured restriction is less than 17'-6". W12-I102 signs should be placed prior to the beginning of the traffic control where the width restriction occurs. Advance signing (W12-I103) shall also be placed where the roadway intersects with the previous state route and with any major local routes where overwidth vehicles are likely to enter the highway. The advance signing must be visible to approaching traffic sufficiently in advance of the intersection to enable overwidth trucks to change direction. This may require the use of more than one advance sign at the intersection. The dimensions shown on the signing shall be the actual measured opening less 18" as noted previously.

PUBLIC CONVENIENCE AND SAFETY (D-1)
Effective: May 1, 2012
Revised: July 15, 2012

Add the following to the end of the fourth paragraph of Article 107.09:

> "If the holiday is on a Saturday or Sunday, and is legally observed on a Friday or Monday, the length of Holiday Period for Monday or Friday shall apply."

Add the following sentence after the Holiday Period table in the fourth paragraph of Article 107.09:

> "The length of Holiday Period for Thanksgiving shall be from 5:00 AM the Wednesday prior to 11:59 PM the Sunday after"

Delete the fifth 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."

ENGINEER'S FIELD OFFICE TYPE A (SPECIAL)

670.02 Engineer's Field Office Type A. Revise the first paragraph of this Article to read:

Engineer's Field Office Type A (Special). Type A (Special) field offices shall have a ceiling height of not less than 2 m (7 ft.) and a floor space of not less than 371 m2 (4000 sq. ft.) with a minimum of three separate offices. The office shall also have a separate storage room capable of being locked for the storage of the nuclear measuring devices. The office shall be provided with sufficient heat, natural and artificial light, and air conditioning. Doors and windows shall be equipped with locks approved by the Engineer.

Revise the first sentence of the second paragraph of this Article to read:

The office shall have an electronic security system that will respond to any breach of exterior doors and windows with an on-site alarm shall be provided.

Revise the second sentence of the third paragraph of this Article to read:

Adequate all-weather parking space shall be available to accommodate a minimum of 25 vehicles in a fenced area with a secure, lockable gate. The parking space is to have at least 3 Handicap spaces, marked properly per City of Chicago standards. Parking space is to be within 100 feet maximum of actual front door entrance. The maintenance of the parking space is included, and will include all needed repairs, snow and ice melting applications, snow removal, ice removal and any landscaping maintenance.

Revise the second sentence of the fourth paragraph of this Article to read:

Solid waste disposal consisting of twenty waste baskets and an outside trash container of sufficient size to accommodate a weekly provided pick-up service.

Add the following to the fourth paragraph of this Article:

A weekly cleaning service for the office shall be provided. The service interval shall be increased as determined by the Engineer. All office building maintenance, including necessary repairs shall be included.

Revise subparagraph (a) of this Article to read:

(a) Twenty desks with minimum working surface (60 in. x 30 in.) each and twelve non-folding chairs with upholstered seats and backs.

Revise subparagraph (b) of this Article to read:

(a) Two desks with minimum working surface 1.1m x 750mm (42 in. x 30 in) each with height adjustment of 23 in. to 30 in. for computer use.

Revise the first sentence of subparagraph (c) of this Article to read:

(c) Two four-post drafting table with minimum top size of 950 mm x 1.2 m (37-1/2 in. x 48 in.).

Revise subparagraph (d) of this Article to read:

(d) Six free standing four drawer legal size file cabinet with lock and and three (3) underwriters' laboratories insulated file device 350 degrees one hour rating.

Revise subparagraph (e) of this Article to read:

(e) Ten folding tables (8 foot) and Twenty four (24) folding chairs.

Revise subparagraph (f) of this Article to read:

(f) Two equipment cabinets of minimum inside dimension of 44 in. high x 24 in. wide x 30 in. deep with lock. The walls shall be of steel with a 3/32 in. 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.

Revise subparagraph (g) of this Article to read:

(g) Two refrigerators with a minimum size of 16 cu. Ft. with a freezer unit.

Revise subparagraph (h) of this Article to read:

(h) Two electric desk type tape printing calculator and two pocket scientific notation calculators with a 1000 hour battery life or with a portable recharger.

Revise subparagraph (i) of this Article to read:

1) Internet Connection. An high speed internet service connection using telephone DSL, cable broadband, or CDMA wireless technology meeting a minimum speed of 25 Mbps. Additionally, an 802.11b/N wireless router shall be provided, which will allow connection by the Engineer and up to four Department staff.

2) Six telephone lines including one line for the fax machine, and two lines for the exclusive use of the Engineer.

Revise subparagraph (j) of this Article to read:

(j) One (1) office copier black and white/color that has full network connectivity for all multifunction such as print, copy, scan and fax. The printer will have the capability of printing and scanning high quality documents including 8.5 X 11, 8.5 X 14 and 11X17 size papers. The copier shall be complete with automatic document feeder and sorter. The unit shall have the ability to perform scanning over the network with the ability to generate files in JPEG, TIFF and PDF formats. Also included is the maintenance (servicing and repair as required) and operating supplies (paper supply of required sizes, ink and toner).

Revise subparagraph (k) of this Article to read:

(k) One plain paper fax machine including maintenance and supplies.

Revise subparagraph (l) of this Article to read:

(l) Six telephones, with touch tone, where available, two digital telephone answering machines. Telephones shall have the capability to allow conference calls and to utilize speakerphone. One telephone shall be placed in the room with the large conference table and provide microphone capabilities for large gatherings.

(s) One electric water cooler dispenser, including weekly water service of a minimum of three (3) units per week.

(t) Four (4) 1.2m x 1.8m (4 ft. x 6 ft.) chalkboard or dry erase board.

(u) One office type conference table with a minimum size of 5 foot x 16 foot (or approved equivalent)

(v) Two plan racks capable of holding multiple sets of full size plans.

670.07 Basis of Payment. Revise the fourth sentence of the first paragraph of this Article to read:

The building or buildings fully equipped, will be paid for at the contract unit price per calendar month or fraction thereof for ENGINEER'S FIELD OFFICE TYPE A (SPECIAL), ENGINEER'S FIELD OFFICE TYPE B or ENGINEER'S FIELD LABORATORY.

TEMPORARY EPOXY PAVEMENT MARKING

Description. This work shall consist of furnishing, installing, and maintaining Temporary Epoxy Pavement Markings.

Material. Materials shall be according to Article 1095.04 of the Standard Specifications.

Equipment. Equipment shall be according to Article 1105.02.

Construction Requirements. Prior to application a surface preparation adhesive shall be applied to a clean, dry road surface. The pavement shall be cleaned by a method of approved by the Engineer to remove all dirt, grease, glaze, or other material that would reduce the adhesion of the markings with minimum or no damage to the pavement surface. No markings shall be placed until the Engineer approves the cleaning. The Temporary Epoxy Pavement Marking shall be placed according to the applicable portions of Article 780.09.

Method of Measurement and Basis of Payment. This work will be paid for at the contract unit price per foot for TEMPORARY EPOXY PAVEMENT MARKING of the line width specified; and/or per square foot (square meters) for TEMPORARY EPOXY PAVMENT MARKING – LETTERS AND SYMBOLS.

Removal will be paid at the contract unit price per square foot (square meter) for WORK ZONE PAVEMENT MARKING REMOVAL.

When temporary pavement marking is shown on the Standard, the cost of the temporary pavement marking will be included in the cost of the Standard.

PREFORMED THERMOPLASTIC PAVEMENT MARKING SHIELD

Description. This work shall consist of furnishing and applying Preformed Thermoplastic Pavement Marking Shields.

Material. Materials shall be according to Article 1095.05 of the Standard Specifications. The materials must be composed of an ester modified rosin resistant to degradation by motor fuels, lubricants etc. in conjunction with aggregates, pigments, binders, abrasives, and glass beads which have been factory produced as a finished product, and meets the requirements of the current edition of the Manual on Uniform Traffic Control Devices for Streets and Highways. The thermoplastic material conforms to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, and potentially being of a color different from white or yellow.

Graded Glass Beads:

The non-black sections of the markings must contain a minimum of thirty percent (30%) intermixed graded glass beads by weight. The intermixed beads shall be clear and transparent. Not more than twenty percent (20%) consists of irregular fused spheroids, or silica. The index of refraction shall not be less than 1.50.

The material must have factory applied coated surface beads and abrasives in addition to the intermixed beads at a rate of 1/2 lb. (± 20%) per 11 sq. ft. The surface beads and abrasives must be applied in an alternating arrangement across the surface of the material so that the surface is covered in what is best described as a “checkerboard” pattern of glass beads and abrasive materials. The abrasive material must have a minimum hardness of 7 (Mohs scale). These factory applied coated surface beads shall have the following specifications:

1) Minimum 80% rounds
2) Minimum refractive index of 1.5

Size Gradation		Retained, %	Passing, %
US Mesh	um		
12	1700	0 - 2%	98 - 100%
14	1400	0 - 6%	94 - 100%
16	1180	1 - 21%	79 – 99%
18	1000	28 - 62%	38 - 72%
20	850	62 - 71%	29 – 38%
30	600	67 - 77%	23 - 33%
50	300	86 - 95%	5 – 14%
80	200	97-100%	0 - 3%

Pigments:

White: The material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected.

Red, Blue, and Yellow: The material shall be manufactured with sufficient pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected. The yellow pigments must be organic and must be heavy-metal free.

Other Colors: The pigments must be heavy-metal free.

Heating indicators: The top surface of the material (same side as the factory applied surface beads) shall have regularly spaced indents. These indents shall act as a visual cue during application that the material has reached a molten state so satisfactory adhesion and proper bead embedment has been achieved and a post-application visual cue that the installation procedures have been followed.

Skid Resistance: The surface of the preformed retroreflective marking materials, wherein every other shaped portion contains glass beads, or abrasives with a minimum hardness of 7 (Mohs scale), shall upon application provide a minimum skid resistance value of 60 BPN when tested according to ASTM: E 303.

Thickness: The material must be supplied at a minimum thickness of 90 mils (2.29 mm) or 125 mils (3.15 mm).

Retroreflectivity: The preformed retroreflective marking materials upon application shall exhibit adequate and uniform nighttime retroreflectivity. The marking materials shall have the following retroreflectivity as measured using a Delta LTL 2000 or LTL-X Retroreflectometer:

White preformed reflective marking materials–minimum of 275 $mcd \cdot m^{-2} \cdot lx^{-1}$

Note: Initial retroreflection and skid resistance are affected by the amount of heat applied during installation. When ambient temperatures are such that greater amounts of heat are required for proper installation, initial retroreflection and skid resistance levels may be affected.

Environmental Resistance: The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.

Abrasives: The abrasives and surface beads must be applied in an alternating arrangement across the surface of the material so that the surface is covered in what is best described as a “checkerboard” pattern of glass beads and abrasive materials. The abrasive material must have a minimum hardness of 7 (Mohs scale).

Interconnected: The material must consist of interconnected individual pieces of preformed thermoplastic pavement material, which through a variety of colors and patterns, make up the desired design. The individual pieces in each material segment (typically 24 in. by 36 in.) must be factory assembled with a compatible material and interconnected so that in the field it is not necessary to assemble the individual pieces within a material segment.

Application.

Asphalt and Concrete: The materials shall be applied using the propane torch or an infrared/radiant heater method recommended by the manufacturer. The material must be able to be applied without minimum requirements for ambient and road temperatures and without any preheating of the pavement to a specific temperature. A sealer specified by the manufacturer must be applied to the substrate prior to material application to assure proper adhesion. The material must be able to be applied without the use of a thermometer. The pavement shall be clean, dry and free of debris. Supplier must enclose application instructions with each box/package.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for PREFORMED THERMOPLASTIC PAVEMENT MARKING SHIELD.

SIGN SHOP DRAWING SUBMITTAL
Effective: January 22, 2013

Add the following paragraph to Article 720.03:

"Shop drawings will be required, according to Article 105.04, for all Arterials/Expressway signs except standards/highway signs covered in the MUTCD. Shop drawings shall be submitted to the Engineer for review and approval prior to fabrication. The shop drawings shall include dimensions, letter sizing, font type, colors and materials."

AGGREGATE SURFACE COURSE FOR TEMPORARY ACCESS
Effective: April 1, 2001
Revised: January 2, 2007

Revise Article 402.10 of the Standard Specifications to read:

"**402.10 For Temporary Access.** The contractor shall construct and maintain aggregate surface course for temporary access to private entrances, commercial entrances and roads according to Article 402.07 and as directed by the Engineer.

The aggregate surface course shall be constructed to the dimensions and grades specified below, except as modified by the plans or as directed by the Engineer.

(a) Private Entrance. The minimum width shall be 12 ft (3.6 m). The minimum compacted thickness shall be 6 in. (150 mm). The maximum grade shall be eight percent, except as required to match the existing grade.

(b) Commercial Entrance. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The maximum grade shall be six percent, except as required to match the existing grade.

(c) Road. The minimum width shall be 24 ft (7.2 m). The minimum compacted thickness shall be 9 in. (230 mm). The grade and elevation shall be the same as the removed pavement, except as required to meet the grade of any new pavement constructed.

Maintaining the temporary access shall include relocating and/or regrading the aggregate surface coarse for any operation that may disturb or remove the temporary access. The same type and gradation of material used to construct the temporary access shall be used to maintain it.

When use of the temporary access is discontinued, the aggregate shall be removed and utilized in the permanent construction or disposed of according to Article 202.03."

Add the following to Article 402.12 of the Standard Specifications:

"Aggregate surface course for temporary access will be measured for payment as each for every private entrance, commercial entrance or road constructed for the purpose of temporary access. If a residential drive, commercial entrance, or road is to be constructed under multiple stages, the aggregate needed to construct the second or subsequent stages will not be measured for payment but shall be included in the cost per each of the type specified."

Revise the second paragraph of Article 402.13 of the Standard Specifications to read:

"Aggregate surface course for temporary access will be paid for at the contract unit price per each for TEMPORARY ACCESS (PRIVATE ENTRANCE), TEMPORARY ACCESS (COMMERCIAL ENTRANCE) or TEMPORARY ACCESS (ROAD).

Partial payment of the each amount bid for temporary access, of the type specified, will be paid according to the following schedule:

(a) Upon construction of the temporary access, sixty percent of the contract unit price per each, of the type constructed, will be paid.

(b) Subject to the approval of the Engineer for the adequate maintenance and removal of the temporary access, the remaining forty percent of the pay item will be paid upon the permanent removal of the temporary access."

AGGREGATE FOR CONCRETE BARRIER (D-1)
Effective: March 11, 2004
Revised: January 24, 2008

Add the following paragraph to Article 637.02 of the Standard Specifications:

"The coarse aggregate to be used in the concrete barrier walls shall conform to the requirement for coarse aggregate used in Class BS concrete according to Article 1004.01(b), paragraph 2."

AGGREGATE SUBGRADE IMPROVEMENT (D-1)
Effective: February 22, 2012
Revised: November 1, 2014

Add the following Section to the Standard Specifications:

"**SECTION 303. AGGREGATE SUBGRADE IMPROVEMENT**

303.01 Description. This work shall consist of constructing an aggregate subgrade improvement.

303.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004
(b) Reclaimed Asphalt Pavement (RAP) (Notes 1, 2 and 3)	1031

Note 1. Crushed RAP, from either full depth or single lift removal, may be mechanically blended with aggregate gradations CS 01 or CS 02 but shall not exceed 40 percent of the total product. The top size of the Coarse RAP shall be less than 4 in. (100 mm) and well graded.

Note 2. RAP having 100 percent passing the 1 1/2 in. (37.5 mm) sieve and being well graded, may be used as capping aggregate in the top 3 in. (75 mm) when aggregate gradations CS 01 or CS 02 are used in lower lifts. When RAP is blended with any of the coarse aggregates, the blending shall be done with mechanically calibrated feeders.

Note 3. The RAP used for aggregate subgrade improvement shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications".

303.03 Equipment. The vibratory machine shall be according to Article 1101.01, or as approved by the Engineer.

303.04 Soil Preparation. The stability of the soil shall be according to the Department's Subgrade Stability Manual for the aggregate thickness specified.

303.05 Placing Aggregate. The maximum nominal lift thickness of aggregate gradations CS 01 or CS 02 shall be 24 in. (600 mm).

303.06 Capping Aggregate. The top surface of the aggregate subgrade shall consist of a minimum 3 in. (75 mm) of aggregate gradations CA 06 or CA 10. When Reclaimed Asphalt Pavement (RAP) is used, it shall be crushed and screened where 100 percent is passing the 1 1/2 in. (37.5 mm) sieve and being well graded. RAP that has been fractionated to size will not be permitted for use in capping. Capping aggregate will not be required when the aggregate subgrade improvement is used as a cubic yard pay item for undercut applications. When RAP is blended with any of the coarse aggregates, the blending shall be done with mechanically calibrated feeders.

303.07 Compaction. All aggregate lifts shall be compacted to the satisfaction of the Engineer. If the moisture content of the material is such that compaction cannot be obtained, sufficient water shall be added so that satisfactory compaction can be obtained.

303.08 Finishing and Maintenance of Aggregate Subgrade Improvement. The aggregate subgrade improvement shall be finished to the lines, grades, and cross sections shown on the plans, or as directed by the Engineer. The aggregate subgrade improvement shall be maintained in a smooth and compacted condition.

303.09 Method of Measurement. This work will be measured for payment according to Article 311.08.

303.10 Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) for AGGREGATE SUBGRADE IMPROVEMENT or at the contract unit price per square yard (square meter) for AGGREGATE SUBGRADE IMPROVEMENT, of the thickness specified.

Add the following to Section 1004 of the Standard Specifications:

"**1004.06 Coarse Aggregate for Aggregate Subgrade Improvement.** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate shall be crushed gravel, crushed stone, or crushed concrete.
(b) Quality. The coarse aggregate shall consist of sound durable particles reasonably free of deleterious materials.
(c) Gradation.

(1) The coarse aggregate gradation for total subgrade thicknesses of 12 in. (300 mm) or greater shall be CS 01 or CS 02.

Grad No.	COARSE AGGREGATE SUBGRADE GRADATIONS Sieve Size and Percent Passing				
	8"	6"	4"	2"	#4
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 02		100	80 ± 10	25 ± 15	

	COARSE AGGREGATE SUBGRADE GRADATIONS (Metric)				
Grad No.	Sieve Size and Percent Passing				
	200 mm	150 mm	100 mm	50 mm	4.75 mm
CS 01	100	97 ± 3	90 ± 10	45 ± 25	20 ± 20
CS 02		100	80 ± 10	25 ± 15	

(2) The 3 in. (75 mm) capping aggregate shall be gradation CA 6 or CA 10.

COARSE AGGREGATE FOR BACKFILL, TRENCH BACKFILL AND BEDDING (D-1)
Effective: November 1, 2011
Revised: November 1, 2013

This work shall be according to Section 1004.05 of the Standard Specifications except for the following:

Reclaimed Asphalt Pavement (RAP) maybe blended with gravel, crushed gravel, crushed stone crushed concrete, crushed slag, chats, crushed sand stone or wet bottom boiler slag. The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". The RAP shall be uniformly graded and shall pass the 1.0 in. (25 mm) screen. When RAP is blended with any of the coarse aggregate listed above, the blending shall be done mechanically with calibrated feeders. The feeders shall have an accuracy of + 2.0 percent of the actual quantity of material delivered. The final blended product shall not contain more than 40 percent by weight RAP.

The coarse aggregate listed above shall meet CA 6 and CA 10 gradations prior to being blended with the processed and uniformly graded RAP. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

CALCIUM ALUMINATE CEMENT (BMPR)
Effective: July 1, 2013

Revise Article 1001.01(e) to read:

"(e) Calcium Aluminate Cement. Calcium aluminate cement shall be used according to Article 1020.04 or when approved by the Engineer. The cement shall meet the standard physical requirements for Type I cement according to AASHTO M 85, except the time of setting shall not apply. The chemical requirements shall be determined according to AASHTO T 105 and shall be as follows: minimum 37 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 1.75 percent loss on ignition, and maximum 7 percent insoluble residue."

DRAINAGE AND INLET PROTECTION UNDER TRAFFIC (DISTRICT 1)
Effective: April 1, 2011
Revised: April 2, 2011

Add the following to Article 603.02 of the Standard Specifications:

" (i) Temporary Hot-Mix Asphalt (HMA) Ramp (Note)…… ……... 1030
(j) Temporary Rubber Ramps (Note 2)

Note 1. The HMA shall have maximum aggregate size of 3/8 in. (95 mm).

Note 2. The rubber material shall be according to the following.

Property	Test Method	Requirement
Durometer Hardness, Shore A	ASTM D 2240	75 ±15
Tensile Strength, psi (kPa)	ASTM D 412	300 (2000) min
Elongation, percent	ASTM D 412	90 min
Specific Gravity	ASTM D 792	1.0 - 1.3
Brittleness, °F (°C)	ASTM D 746	-40 (-40)"

Revise Article 603.07 of the Standard Specifications to read:

" **603.07 Protection Under Traffic.** After the casting has been adjusted and the Class PP concrete has been placed, the work shall be protected by a barricade and two lights according to Article 701.17(e)(3)b.

When castings are under traffic before the final surfacing operation has been started, properly sized temporary ramps shall be placed around the drainage and/or utility castings according to the following methods.

(a) Temporary Asphalt Ramps. Temporary hot-mix asphalt ramps shall be placed around the casting, flush with its surface and decreasing to a featheredge in a distance of 2 ft (600 mm) around the entire surface of the casting.

(b) Temporary Rubber Ramps. Temporary rubber ramps shall only be used on roadways with permanent posted speeds of 40 mph or less and when the height of the casting to be protected meets the proper sizing requirements for the rubber ramps as shown below.

Dimension	Requirement
Inside Opening	Outside dimensions of casting + 1 in. (25 mm)
Thickness at inside edge	Height of casting $\pm$ 1/4 in. (6 mm)
Thickness at outside edge	1/4 in. (6 mm) max.
Width, measured from inside opening to outside edge	8 1/2 in. (215 mm) min

Placement shall be according to the manufacturer's specifications.

Temporary ramps for castings shall remain in place until surfacing operations are undertaken within the immediate area of the structure. Prior to placing the surface course, the temporary ramp shall be removed. Excess material shall be disposed of according to Article 202.03."

EMBANKMENT I
Effective: March 1, 2011
Revised: November 1, 2013

Description. This work shall be according to Section 205 of the Standard Specifications except for the following.

Material. All material shall be approved by the District Geotechnical Engineer. The proposed material must meet the following requirements.

The laboratory Standard Dry Density shall be a minimum of 90 lb/cu ft (1450 kg/cu m) when determined according to AASHTO T 99 (Method C).

The organic content shall be less than ten percent determined according to AASHTO T 194 (Wet Combustion).

Soils which demonstrate the following properties shall be restricted to the interior of the embankment and shall be covered on both the sides and top of the embankment by a minimum of 3 ft (900 mm) of soil not considered detrimental in terms of erosion potential or excess volume change.

1) A grain size distribution with less than 35 percent passing the number 75 um (#200) sieve.

2) A plasticity index (PI) of less than 12.

3) A liquid limit (LL) in excess of 50.

Reclaimed asphalt shall not be used within the ground water table or as a fill if ground water is present.

The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, “Reclaimed Asphalt Pavement (RAP) for Aggregate Applications”. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

CONSTRUCTION REQUIREMENTS

Samples. Embankment material shall be sampled, tested, and approved before use. The contractor shall identify embankment sources, and provide equipment as the Engineer requires, for the collection of samples from those sources. Samples will be furnished to the Geotechnical Engineer a minimum of three weeks prior to use in order that laboratory tests for approval and compaction can be performed. Embankment material placement cannot begin until tests are completed and approval given.

Placing Material. In addition to Article 202.03, broken concrete, reclaimed asphalt with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities shall be placed in 6 inches (150 mm) lifts and disked with the underlying lift until a uniform homogenous material is formed. This process also applies to the overlaying lifts. The disk must have a minimum blade diameter of 24 inches (600 mm).

When embankments are to be constructed on hillsides or existing slopes that are steeper than 3H:1V, steps shall be keyed into the existing slope by stepping and benching as shown in the plans or as directed by the engineer.

Compaction. Soils classification for moisture content control will be determined by the Soils Inspector using visual field examination techniques and the IDH Textural Classification Chart.

When tested for density in place each lift shall have a maximum moisture content as follows.

a) A maximum of 110 percent of the optimum moisture for all forms of clay soils.

b) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.

Stability. The requirement for embankment stability in Article 205.04 will be measured with a Dynamic Cone Penetrometer (DCP) according to the test method in the IDOT Geotechnical Manual. The penetration rate must be equal or less than 1.5 inches (38 mm) per blow.

Basis of Payment. This work will not be paid separately but will be considered as included in the various items of excavation.

FINE AGGREGATE FOR HOT-MIX ASPHALT (HMA) (D-1)
Effective: May 01, 2007
Revised: January 1, 2012

Revise Article 1003.03 (c) of the Standard Specifications to read:

"(c) Gradation. The fine aggregate gradation for all HMA shall be FA1, FA 2, FA 20, FA 21 or FA 22. When Reclaimed Asphalt Pavement (RAP) is incorporated in the HMA design, the use of FA 21 Gradation will not be permitted.

GROUND TIRE RUBBER (GTR) MODIFIED ASPHALT BINDER (D-1)
Effective: June 29, 2006
Revised: January 01, 2013

Add the following to the end of article 1032.05 of the Standard Specifications:

"(c) Ground Tire Rubber (GTR) Modified Asphalt Binder. A quantity of 10.0 to 14.0 percent GTR (Note 1) shall be blended by dry unit weight with a PG 64-28 to make a GTR 70-28 or a PG 58-28 to make a GTR 64-28. The base PG 64-28 and PG 58-28 asphalt binders shall meet the requirements of Article 1032.05(a). Compatible polymers may be added during production. The GTR modified asphalt binder shall meet the requirements of the following table.

Test	Asphalt Grade GTR 70-28	Asphalt Grade GTR 64-28
Flash Point (C.O.C.), AASHTO T 48, °F (°C), min.	450 (232)	450 (232)
Rotational Viscosity, AASHTO T 316 @ 275 °F (135 °C), Poises, Pa·s, max.	30 (3)	30 (3)
Softening Point, AASHTO T 53, °F (°C), min.	135 (57)	130 (54)
Elastic Recovery, ASTM D 6084, Procedure A (sieve waived) @ 77 °F, (25 °C), aged, ss, 100 mm elongation, 5 cm/min., cut immediately, %, min.	65	65

Note 1. GTR shall be produced from processing automobile and/or light truck tires by the ambient grinding method. GTR shall not exceed 1/16 in. (2 mm) in any dimension and shall contain no free metal particles or other materials. A mineral powder (such as talc) meeting the requirements of AASHTO M 17 may be added, up to a maximum of four percent by weight of GTR to reduce sticking and caking of the GTR particles. When tested in accordance with Illinois modified AASHTO T 27, *a* 50 g sample of the GTR shall conform to the following gradation requirements:

Sieve Size	Percent Passing
No. 16 (1.18 mm)	100
No. 30 (600 μm)	95 ± 5
No. 50 (300 μm)	> 20

Add the following to the end of Note 1. of article 1030.03 of the Standard Specifications:

"A dedicated storage tank for the Ground Tire Rubber (GTR) modified asphalt binder shall be provided. This tank must be capable of providing continuous mechanical mixing throughout by continuous agitation and recirculation of the asphalt binder to provide a uniform mixture. The tank shall be heated and capable of maintaining the temperature of the asphalt binder at 300 °F to 350 °F (149 °C to 177 °C). The asphalt binder metering systems of dryer drum plants shall be calibrated with the actual GTR modified asphalt binder material with an accuracy of ± 0.40 percent."

Revise 1030.02(c) of the Standard Specifications to read:

"(c) RAP Materials (Note 3) ……..…..1031"

Add the following note to 1030.02 of the Standard Specifications:

Note 3. When using reclaimed asphalt pavement and/or reclaimed asphalt shingles, the maximum asphalt binder replacement percentage shall be according to the most recent special provision for recycled materials.

HEAT OF HYDRATION CONTROL FOR CONCRETE STRUCTURES (D-1)
Effective: November 1, 2013

Article 1020.15 shall not apply.

HMA MIXTURE DESIGN REQUIREMENTS (D-1)
Effective: January 1, 2013
Revised: November 1, 2014

1) Design Composition and Volumetric Requirements

Revise the last sentence of the first paragraph of Article 312.05 of the Standard Specifications to read:

"The minimum compacted thickness of each lift shall be according to Article 406.06(d)."

Delete the minimum compacted lift thickness table in Article 312.05 of the Standard Specifications.

Revise the second paragraph of Article 355.02 of the Standard Specifications to read:

"The mixture composition used shall be IL-19.0."

Revise Article 355.05(a) of the Standard Specifications to read:

"(a) The top lift thickness shall be 2 1/4 in. (60 mm) for mixture composition IL-19.0."

Revise the Leveling Binder table and second paragraph of Article 406.05(c) of the Standard Specifications to read:

"Leveling Binder	
Nominal, Compacted, Leveling Binder Thickness, in. (mm)	Mixture Composition
≤ 1 1/4 (32)	IL-4.75, IL-9.5, or IL-9.5L
> 1 1/4 to 2 (32 to 50)	IL-9.5 or IL-9.5L

The density requirements of Article 406.07(c) shall apply for leveling binder, machine method, when the nominal compacted thickness is: 3/4 in. (19 mm) or greater for IL-4.75 mixtures; and 1 1/4 in. (32 mm) or greater for IL-9.5 and IL-9.5L mixtures."

Revise the table in Article 406.06(d) of the Standard Specifications to read:

"MINIMUM COMPACTED LIFT THICKNESS	
Mixture Composition	Thickness, in. (mm)
IL-4.75	3/4 (19)
SMA-9.5, IL-9.5, IL-9.5L	1 1/2 (38)
SMA-12.5	2 (50)
IL-19.0, IL-19.0L	2 1/4 (57)"

Revise the ninth paragraph of Article 406.14 of the Standard Specifications to read:

"Test strip mixture will be evaluated at the contract unit price according to the following."

Revise Article 406.14(a) of the Standard Specifications to read:

"(a) If the HMA placed during the initial test strip is determined to be acceptable the mixture will be paid for at the contract unit price."

Revise Article 406.14(b) of the Standard Specifications to read:

"(b) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was not produced within 2.0 to 6.0 percent air voids or within the individual control limits of the JMF according to the Department's test results, the mixture will not be paid for and shall be removed at the Contractor's expense. An additional test strip shall be constructed and the mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Revise Article 406.14(c) of the Standard Specifications to read:

"(c) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF according to the Department's test results, the mixture shall be removed. Removal will be paid according to Article 109.04. This initial mixture will be paid for at the contract unit price. An additional test strip shall be constructed and the mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Delete Article 406.14(d) of the Standard Specifications.

Delete Article 406.14(e) of the Standard Specifications.

Delete the last sentence of Article 407.06(c) of the Standard Specifications.

Revise Note 2. of Article 442.02 of the Standard Specifications to read:

"Note 2. The mixture composition of the HMA used shall be IL-19.0 binder, designed with the same Ndesign as that specified for the mainline pavement."

Delete the second paragraph of Article 482.02 of the Standard Specifications.

Revise the first sentence of the sixth paragraph of Article 482.05 of the Standard Specifications to read:

"When the mainline HMA binder and surface course mixture option is used on resurfacing projects, shoulder resurfacing widths of 6 ft (1.8 m) or less may be placed simultaneously with the adjacent traffic lane for both the binder and surface courses."

Revise the second sentence of the fourth paragraph of Article 601.04 of the Standard Specifications to read:

"The top 5 in. (125 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density."

Revise the second sentence of the fifth paragraph of Article 601.04 of the Standard Specifications to read:

"The top 8 in. (200 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density."

Revise Article 1003.03(c) of the Standard Specifications to read:

"(c) Gradation. The fine aggregate gradation for all HMA shall be FA 1, FA 2, FA 20, FA 21, or FA 22. The fine aggregate gradation for SMA shall be FA/FM 20.

For mixture IL-4.75 and surface mixtures with an Ndesign = 90, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag meeting the FA 20 gradation.

For mixture IL-19.0, Ndesign = 90 the fine aggregate fraction shall consist of at least 67 percent manufactured sand meeting FA 20 or FA 22 gradation. For mixture IL-19.0, Ndesign = 50 or 70 the fine aggregate fraction shall consist of at least 50 percent manufactured sand meeting FA 20 or FA 22 gradation. The manufactured sand shall be stone sand, slag sand, steel slag sand, or combinations thereof.

Gradation FA 1, FA 2, or FA 3 shall be used when required for prime coat aggregate application for HMA."

Delete the last sentence of the first paragraph of Article 1004.03(b) of the Standard Specifications.

Revise the table in Article 1004.03(c) of the Standard Specifications to read:

"Use	Size/Application	Gradation No.
Class A-1, 2, & 3	3/8 in. (10 mm) Seal	CA 16
Class A-1	1/2 in. (13 mm) Seal	CA 15
Class A-2 & 3	Cover	CA 14
HMA High ESAL	IL-19.0 IL-9.5	CA 11 [1/] CA 16, CA 13[3/]
HMA Low ESAL	IL-19.0L IL-9.5L Stabilized Subbase or Shoulders	CA 11 [1/] CA 16
SMA[2/]	1/2 in. (12.5mm) Binder & Surface IL 9.5 Surface	CA13[3/], CA14 or CA16 CA16, CA 13[3/]

1/ CA 16 or CA 13 may be blended with the gradations listed.
2/ The coarse aggregates used shall be capable of being combined with stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation and mineral filler to meet the approved mix design and the mix requirements noted herein.
3/ CA 13 shall be 100 percent passing the 1/2 in. (12.5mm) sieve.

Revise Article 1004.03(e) of the Supplemental Specifications to read:

"(e) Absorption. For SMA the coarse aggregate shall also have water absorption ≤ 2.0 percent."

Revise the nomenclature table in Article 1030.01 of the Standard Specifications to read:

"High ESAL	IL-19.0 binder; IL-9.5 surface; IL-4.75; SMA-12.5, SMA-9.5
Low ESAL	IL-19.0L binder; IL-9.5L surface; Stabilized Subbase (HMA)[1/]; HMA Shoulders[2/]

1/ Uses 19.0L binder mix.

2/ Uses 19.0L for lower lifts and 9.5L for surface lift."

Revise Article 1030.02 of the Standard Specifications and Supplemental Specifications to read:

"**1030.02 Materials.** Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate	1004.03
(b) Fine Aggregate	1003.03
(c) RAP Material	1031
(d) Mineral Filler	1011
(e) Hydrated Lime	1012.01
(f) Slaked Quicklime (Note 1)	
(g) Performance Graded Asphalt Binder (Note 2)	1032
(h) Fibers (Note 3)	
(i) Warm Mix Asphalt (WMA) Technologies (Note 4)	

Note 1. Slaked quicklime shall be according to ASTM C 5.

Note 2. The asphalt binder shall be an SBS PG 76-28 when the SMA is used on a full-depth asphalt pavement and SBS PG 76-22 when used as an overlay, except where modified herein. The asphalt binder shall be an Elvaloy or SBS PG 76-22 for IL-4.75, except where modified herein. The elastic recovery shall be a minimum of 80.

Note 3. A stabilizing additive such as cellulose or mineral fiber shall be added to the SMA mixture according to Illinois Modified AASHTO M 325. The stabilizing additive shall meet the Fiber Quality Requirements listed in Illinois Modified AASHTO M 325. Prior to approval and use of fibers, the Contractor shall submit a notarized certification by the producer of these materials stating they meet these requirements. Reclaimed Asphalt Shingles (RAS) may be used in Stone Matrix Asphalt (SMA) mixtures designed with an SBA polymer modifier as a fiber additive if the mix design with RAS included meets AASHTO T305 requirements. The RAS shall be from a certified source that produces either Type I or Type 2. Material shall meet requirements noted herein and the actual dosage rate will be determined by the Engineer.

Note 4. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, "Warm Mix Asphalt Technologies"."

Revise Article 1030.04(a)(1) of the Standard Specifications and the Supplemental Specifications to read:

" (1)High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

High ESAL, MIXTURE COMPOSITION (% PASSING) [1/]										
Sieve Size	IL-19.0 mm		SMA [4/] IL-12.5 mm		SMA [4/] IL-9.5 mm		IL-9.5 mm		IL-4.75 mm	
	min	max	min	max	min	max	min	max	min	max
1 1/2 in (37.5 mm)										
1 in. (25 mm)		100								
3/4 in. (19 mm)	90	100		100						
1/2 in. (12.5 mm)	75	89	80	100		100		100		100
3/8 in. (9.5 mm)				65	90	100	90	100		100
#4 (4.75 mm)	40	60	20	30	36	50	34	69	90	100
#8 (2.36 mm)	20	42	16	24 [5/]	16	32 [5/]	34 [6/]	52 [2/]	70	90
#16 (1.18 mm)	15	30					10	32	50	65
#30 (600 μm)			12	16	12	18				
#50 (300 μm)	6	15					4	15	15	30
#100 (150 μm)	4	9					3	10	10	18
#200 (75 μm)	3	6	7.0	9.0 [3/]	7.5	9.5 [3/]	4	6	7	9 [3/]
Ratio Dust/Asphalt Binder		1.0		1.5		1.5		1.0		1.0

1/ Based on percent of total aggregate weight.

2/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign = 90.

3/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer.

4/ The maximum percent passing the #635 (20 μm) sieve shall be ≤ 3 percent.

5/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted above the percentage stated on the table.

6/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted below 34 percent.

Delete Article 1030.04(a)(3) of the Standard Specifications.

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise Article 1030.04(b)(1) of the Standard Specifications to read:

"(1) High ESAL Mixtures. The target value for the air voids of the HMA shall be 4.0 percent and for IL-4.75 it shall be 3.5 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix, and shall conform to the following requirements.

VOLUMETRIC REQUIREMENTS High ESAL				
	Voids in the Mineral Aggregate (VMA), % minimum			Voids Filled with Asphalt Binder (VFA), %
Ndesign	IL-19.0	IL-9.5	IL-4.75 1/	
50	13.5	15.0	18.5	65 – 78 2/
70				65 - 75
90				

1/ Maximum Draindown for IL-4.75 shall be 0.3 percent

2/ VFA for IL-4.75 shall be 72-85 percent"

Revise the table in Article 1030.04(b)(2) of the Standard Specifications to read:

"VOLUMETRIC REQUIREMENTS Low ESAL				
Mixture Composition	Design Compactive Effort	Design Air Voids Target %	VMA (Voids in the Mineral Aggregate), % min.	VFA (Voids Filled with Asphalt Binder), %
IL-9.5L	N_{DES} =30	4.0	15.0	65-78
IL-19.0L	N_{DES} =30	4.0	13.5	N/A"

Replace Article 1030.04(b)(3) of the Standard Specifications with the following:

"(3) SMA Mixtures.

Volumetric Requirements SMA [1/]			
Ndesign	Design Air Voids Target %	Voids in the Mineral Aggregate (VMA), % min.	Voids Filled with Asphalt (VFA), %
80 [4/]	3.5	17.0 [2/] 16.0 [3/]	75 - 83

1/ Maximum draindown shall be 0.3 percent. The draindown shall be determined at the JMF asphalt binder content at the mixing temperature plus 30 °F.

2/ Applies when specific gravity of coarse aggregate is ≥ 2.760.

3/ Applies when specific gravity of coarse aggregate is < 2.760.

4/ Blending of different types of aggregate will not be permitted. For surface course, the coarse aggregate can be crushed steel slag, crystalline crushed stone or crushed sandstone. For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel, crystalline crushed stone, or crushed sandstone.

Delete Article 1030.04(b)(4) of the Standard Specifications.

Delete Article 1030.04(b)(5) from the Supplemental Specifications.

Delete last sentence of the second paragraph of Article 1102.01(a) (13) a.

Add to second paragraph in Article 1102.01 (a) (13) a.:

"As an option, collected bag-house dust may be used in lieu of manufactured mineral filler, provided; 1) there is enough available for the production of the SMA mix for the entire project and 2) a mix design was prepared with collected bag-house dust."

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:

"Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Test Method See Manual of Test Procedures for Materials
Aggregate Gradation % passing sieves: 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 µm) No. 200 (75 µm)	1 washed ignition oven test on the mix per half day of production Note 3.	Illinois Procedure
Asphalt Binder Content by Ignition Oven Note 1.	1 per half day of production	Illinois-Modified AASHTO T 308
VMA Note 2.	Day's production ≥ 1200 tons: 1 per half day of production	Illinois-Modified AASHTO R 35
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	
Air Voids Bulk Specific Gravity of Gyratory Sample Note 4.	Day's production ≥ 1200 tons: 1 per half day of production	Illinois-Modified AASHTO T 312
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	
Maximum Specific Gravity of Mixture	Day's production ≥ 1200 tons: 1 per half day of production	Illinois-Modified AASHTO T 209
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)	

Note 1. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.

Note 2. The G_{sb} used in the voids in the mineral aggregate (VMA) calculation shall be the same average G_{sb} value listed in the mix design.

Note 3. The Engineer reserves the right to require additional hot bin gradations for batch plants if control problems are evident.

Note 4. The WMA compaction temperature for mixture volumetric testing shall be 270 ± 5 °F (132 ± 3 °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be 270 ± 5 °F (132 ± 3 °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature, it shall be reheated to standard HMA compaction temperatures."

Revise the table in Article 1030.05(d)(2)b. of the Standard Specifications to read:

"Parameter	High ESAL Mixture Low ESAL Mixture
Ratio Dust/Asphalt Binder	0.6 to 1.2
Moisture	0.3 %"

Revise the Article 1030.05(d)(4) of the Supplemental Specifications to read:

"(4) Control Limits. Target values shall be determined by applying adjustment factors to the AJMF where applicable. The target values shall be plotted on the control charts within the following control limits.

"CONTROL LIMITS						
Parameter	High ESAL		SMA		IL-4.75	
	Individual Test	Moving Avg. of 4	Test	Moving Avg. of 4	Individual Test	Moving Avg. of 4
% Passing: 1/						
1/2 in. (12.5 mm)	± 6 %	± 4 %	± 6 %	± 4 %		
3/8 in. (9.5mm)			± 4 %	± 3 %		
No. 4 (4.75 mm)	± 5 %	± 4 %	± 5 %	± 4 %		
No. 8 (2.36 mm)	± 5 %	± 3 %	± 4 %	± 2 %		
No. 16 (1.18 mm)			± 4 %	± 2 %	± 4 %	± 3 %
No. 30 (600 µm)	± 4 %	± 2.5 %	± 4 %	± 2.5 %		
Total Dust Content No. 200 (75 µm)	± 1.5 %	± 1.0 %			± 1.5 %	± 1.0 %
Asphalt Binder Content	± 0.3 %	± 0.2 %	± 0.2 %	± 0.1 %	± 0.3 %	± 0.2 %
Voids	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %	± 1.2 %	± 1.0 %
VMA	-0.7 % 2/	-0.5 % 2/	-0.7 % 2/	-0.5 % 2/	-0.7 % 2/	-0.5 % 2/

1/ Based on washed ignition oven

2/ Allowable limit below minimum design VMA requirement

DENSITY CONTROL LIMITS		
Mixture Composition	Parameter	Individual Test
IL-4.75	Ndesign = 50	93.0 - 97.4 % 1/
IL-9.5	Ndesign = 90	92.0 - 96.0 %
IL-9.5,IL-9.5L	Ndesign < 90	92.5 - 97.4 %
IL-19.0	Ndesign = 90	93.0 - 96.0 %
IL-19.0, IL-19.0L	Ndesign < 90	93.0 2/- 97.4 %
SMA	Ndesign = 80	93.5 - 97.4 %

1/ Density shall be determined by cores or by correlated, approved thin lift nuclear gauge.

2/ 92.0 % when placed as first lift on an unimproved subgrade."

Revise the table in Article 1030.05(d)(5) of the Supplemental Specifications to read:

"CONTROL CHART REQUIREMENTS	High ESAL, Low ESAL, SMA & IL-4.75
Gradation 1/ 3/	% Passing Sieves: 1/2 in. (12.5 mm) 2/ No. 4 (4.75 mm) No. 8 (2.36 mm) No. 30 (600 µm)
Total Dust Content 1/	No. 200 (75 µm)
	Asphalt Binder Content
	Bulk Specific Gravity
	Maximum Specific Gravity of Mixture
	Voids
	Density
	VMA

1/ Based on washed ignition oven.

2/ Does not apply to IL-4.75.

3/ SMA also requires the 3/8 in. (9.5 mm) sieve."

Delete Article 1030.05(d)(6)a.1.(b.) of the Standard Specifications.

Delete Article 1030.06(b) of the Standard Specifications.

Delete Article 1102.01(e) of the Standard Specifications.

2) Design Verification and Production

Description. The following states the requirements for Hamburg Wheel and Tensile Strength testing for High ESAL, IL-4.75, and Stone Matrix Asphalt (SMA) hot-mix asphalt (HMA) mixes during mix design verification and production.

Mix Design Testing. Add the following below the referenced AASHTO standards in Article 1030.04 of the Standard Specifications:

AASHTO T 324 Hamburg Wheel Test

AASHTO T 283 Tensile Strength Test

Add the following to Article 1030.04 of the Standard Specifications:

"(d) Verification Testing. High ESAL, IL-4.75, and SMA mix designs submitted for verification will be tested to ensure that the resulting mix designs will pass the required criteria for the Hamburg Wheel Test (IL mod AASHTO T-324) and the Tensile Strength Test (IL mod AASHTO T-283). The Department will perform a verification test on gyratory specimens compacted by the Contractor. If the mix fails the Department's verification test, the Contractor shall make the necessary changes to the mix and resubmit compacted specimens to the Department for verification. If the mix fails again, the mix design will be rejected.

All new and renewal mix designs will be required to be tested, prior to submittal for Department verification and shall meet the following requirements:

(1)Hamburg Wheel Test criteria. The maximum allowable rut depth shall be 0.5 in. (12.5 mm). The minimum number of wheel passes at the 0.5 in. (12.5 mm) rut depth criteria shall be based on the high temperature binder grade of the mix as specified in the mix requirements table of the plans.

Illinois Modified AASHTO T 324 Requirements [1/]

Asphalt Binder Grade	# Repetitions	Max Rut Depth (mm)
PG 70 -XX (or higher)	20,000	12.5
PG 64 -XX (or lower)	10,000	12.5

1/ When produced at temperatures of 275 ± 5 °F (135 ± 3 °C) or less, loose Warm Mix Asphalt shall be oven aged at 270 ± 5 °F (132 ± 3 °C) for two hours prior to gyratory compaction of Hamburg Wheel specimens.

Note: For SMA Designs (N-80) the maximum rut depth is 6.0 mm at 20,000 repetitions.
For IL 4.75mm Designs (N-50) the maximum rut depth is 9.0mm at 15,000 repetitions.

(2) Tensile Strength Criteria. The minimum allowable conditioned tensile strength shall be 60 psi (415 kPa) for non-polymer modified performance graded (PG) asphalt binder and 80 psi (550 kPa) for polymer modified PG asphalt binder. The maximum allowable unconditioned tensile strength shall be 200 psi (1380 kPa)."

Production Testing. Revise Article 1030.06(a) of the Standard Specifications to read:

"(a) High ESAL, IL-4.75, WMA, and SMA Mixtures. For each contract, a 300 ton (275 metric tons) test strip, except for SMA mixtures it will be 400 ton (363 metric ton), will be required at the beginning of HMA production for each mixture with a quantity of 3000 tons (2750 metric tons) or more according to the Manual of Test Procedures for Materials "Hot Mix Asphalt Test Strip Procedures".

Before start-up, target values shall be determined by applying gradation correction factors to the JMF when applicable. These correction factors shall be determined from previous experience. The target values, when approved by the Engineer, shall be used to control HMA production. Plant settings and control charts shall be set according to target values.

Before constructing the test strip, target values shall be determined by applying gradation correction factors to the JMF when applicable. After any JMF adjustment, the JMF shall become the Adjusted Job Mix Formula (AJMF). Upon completion of the first acceptable test strip, the JMF shall become the AJMF regardless of whether or not the JMF has been adjusted. If an adjustment/plant change is made, the Engineer may require a new test strip to be constructed. If the HMA placed during the initial test strip is determined to be unacceptable to remain in place by the Engineer, it shall be removed and replaced.

The limitations between the JMF and AJMF are as follows.

Parameter	Adjustment
1/2 in. (12.5 mm)	± 5.0 %
No. 4 (4.75 mm)	± 4.0 %
No. 8 (2.36 mm)	± 3.0 %
No. 30 (600 µm)	*
No. 200 (75 µm)	*
Asphalt Binder Content	± 0.3 %

* In no case shall the target for the amount passing be greater than the JMF.

Any adjustments outside the above limitations will require a new mix design.

Mixture sampled to represent the test strip shall include additional material sufficient for the Department to conduct Hamburg Wheel testing according to Illinois Modified AASHTO T324 (approximately 60 lb (27 kg) total).

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria is being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

The Department may conduct additional Hamburg Wheel tests on production material as determined by the Engineer."

Revise the title of Article 1030.06(b) of the Standard Specifications to read:

"(b) Low ESAL Mixtures."

Add the following to Article 1030.06 of the Standard Specifications:

"(c) Hamburg Wheel Test. All HMA mixtures shall be sampled within the first 500 tons (450 metric tons) on the first day of production or during start up with a split reserved for the Department. The mix sample shall be tested according to the Illinois Modified AASHTO T 324 and shall meet the requirements specified herein. Mix production shall not exceed 1500 tons (1350 metric tons) or one day's production, whichever comes first, until the testing is completed and the mixture is found to be in conformance. The requirement to cease mix production may be waived if the plant produced mixture demonstrates conformance prior to start of mix production for a contract.

The Department may conduct additional Hamburg Wheel Tests on production material as determined by the Engineer. If the mixture fails to meet the Hamburg Wheel criteria, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria"

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria are being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

Method of Measurement:

Add the following after the fourth paragraph of Article 406.13 (b):

"The plan quantities of SMA mixtures shall be adjusted using the actual approved binder and surface Mix Design's G_{mb}."

Basis of Payment.

Replace the seventh paragraph of Article 406.14 of the Standard Specifications with the following:

"For all mixes designed and verified under the Hamburg Wheel criteria, the cost of furnishing and introducing anti-stripping additives in the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.

No additional compensation will be awarded to the Contractor because of reduced production rates associated with the addition of the anti-stripping additive."

HOT MIX ASPHALT - QUANTITY CORRECTION (BMPR)
Effective: October 1, 2014
Revised: October 2, 2014

Revise the fifth paragraph of Article 406.13(b) of the Standard Specifications to read as follows:

"HMA and Stone Matrix Asphalt (SMA) mixture in excess of 103 percent of the quantity shown on the plans or the plan quantity as specified by the Engineer will not be measured for payment. The "adjusted quantity to be placed" and the "adjusted pay quantity" for HMA and SMA mixtures will be calculated as follows.

Adjusted Quantity To Be Placed = C x quantity shown on the plans or the plan quantity as specified by the Engineer

where: C = English: $C = \frac{G_{mb} \times 46.8}{U}$ Metric: $C = \frac{G_{mb} \times 24.99}{U}$

and where: G_{mb} = average bulk specific gravity from approved mix design
U = unit weight of HMA shown on the plans in lb/sq yd/in.
(kg/sq m/25 mm), used to estimate plan quantity
46.8 = English constant
24.99 = metric constant

Adjusted Pay Quantity (not to exceed 103 percent of the quantity shown on the plans or the plan quantity as specified by the Engineer) = B x HMA tons actually placed

where: $B = \frac{1}{C}$

If project circumstances warrant a new mix design, the above equations shall be used to calculate the adjusted plan quantity and adjusted pay quantity for each mix design using its respective average bulk specific gravity."

HOT MIX ASPHALT QUALITY CONTROL FOR PERFORMANCE (BMPR)
Effective: January 1, 2012
Revised: December 1, 2013

Description. This special provision describes the procedures for production, placement and payment of hot-mix asphalt (HMA). This work shall be according to the Standard Specifications except as modified herein. This special provision shall apply to HMA mixtures as listed in the following table.

Mixture/Use:	Stabilized Subbase - HMA (HMA Binder IL-19.0)
Location:	SB I-55: Sta. 80+86.00 to Sta. 85+69.00
Location:	Ramp NW: Sta. 411+77.43 to Sta. 413+27.43 and Sta. 414+47.43 to Sta. 422+28.31
Location:	Ramp SW: Sta. 103+86.00 to Sta. 113+82.80
Mixture/Use:	
Location:	
Mixture/Use:	
Location:	

Exceptions may be approved for small tonnage less than 800 (725 metric) tons and miscellaneous mixture applications as defined by the Engineer.

Delete Articles:	406.06(b)(1), 2nd Paragraph	(Temperature requirements)
	406.06 (e), 3rd Paragraph	(Pavers speed requirements)
	406.07	(Compaction)
	1030.05(a)(4, 5, 9,)	(QC/QA Documents)
	1030.05(d)(2)a.	(Plant Tests)
	1030.05(d)(2)b.	(Dust-to-Asphalt and Moisture Content)
	1030.05(d)(2)d.	(Small Tonnage)
	1030.05(d)(2)f.	(HMA Sampling)
	1030.05(d)(3)	(Required Field Tests)
	1030.05(d)(4)	(Control Limits)
	1030.05(d)(5)	(Control Charts)
	1030.05(d)(7)	(Corrective Action for Field Tests (Density))
	1030.05(e)	(Quality Assurance by the Engineer)
	1030.05(f)	(Acceptance by the Engineer)
	1030.06(a), 3rd paragraph	(Before start-up…)
	1030.06(a), 7th paragraph	(After an acceptable…)
	1030.06(a), 8th paragraph	(If a mixture…)
	1030.06(a), 9th paragraph	(A nuclear/core…)

Definitions:

(a) Quality Control (QC): All production and construction activities by the Contractor required to achieve the required level of quality.

(b) Quality Assurance (QA): All monitoring and testing activities by the Engineer required to assess product quality, level of payment, and acceptability of the product.

(c) Pay Parameters: Pay Parameters shall be field Voids in the Mineral Aggregate (VMA), voids, and density. Field VMA will be calculated using the combined aggregates bulk specific gravity (G_{sb}) from the mix design.

(d) Mixture Lot. A lot shall begin once an acceptable test strip has been completed and the AJMF has been determined. If the test strip is waived, a sublot shall begin with the start of production. A mixture lot shall consist of four sublots unless it is the last or only lot, in which case it may consist of as few as one sublot

(e) Mixture Sublot. A mixture sublot for field VMA, voids, and Dust/AC will be a maximum of 1000 tons (910 metric tons).

- If the remaining quantity is greater than 200 but less than 1000 tons, a sublot will consist of that amount.
- If the remaining quantity is less than or equal to 200 tons, the quantity shall be combined with the previous sublot.

(f) Density Interval. Density Intervals shall be every 0.2 mile (320 m) for lift thickness equal to or less than 3 in. (75 mm) and 0.1 mile (160 m) for lift thickness greater than 3 in. (75 mm).

(g) Density Sublot. A sublot for density shall be the average of five consecutive Density Intervals. If a Density Interval is less than 200 ft (60 m), it will be combined with the previous Density Intervals.

- If one or two Density Intervals remain outside a sublot, they shall be included in the previous sublot.

- If three or more Density Intervals remain, they shall be considered a sublot.

(h) Density Test: A density test consists of a core taken at a random longitudinal and random transverse offset within each Density Interval. The HMA maximum theoretical gravity (G_{mm}) will be based on the running average of four Department test results. Initial G_{mm} will be based on the average of the first four test results. If less than four G_{mm} results are available, use an average of all available Department G_{mm} test results.

The random transverse offset excludes a distance from each outer edge equal to the lift thickness or a minimum of 4 in. (100 mm). If a core is located within one foot of an unconfined edge, 2.0 percent density will be added to the density of that core.

Quality Control (QC) by the Contractor:

The Contractor's QC plan shall include the schedule of testing for both pay parameters and non-pay parameters required to control the product such as asphalt binder content and mixture gradation. The minimum test frequency shall be according to the following table.

Minimum Quality Control Sampling and Testing Requirements

Quality Characteristic		Minimum Test Frequency
Mixture Gradation		1 per sublot
Asphalt Binder Content		
Dust/AC Ratio		
Field VMA		
Voids	G_{mb}	
	G_{mm}	

The Contractor's splits in conjunction with other quality control tests shall be used to control production.

The Contractor shall submit split jobsite mix sample test results to the Engineer within 48 hours of the time of sampling. All QC testing shall be performed in a qualified laboratory by personnel who have successfully completed the Department's HMA Level I training.

Quality Assurance (QA) by the Engineer:

Voids, field VMA and Dust/AC ratio: The Engineer will determine the random tonnage and the Contractor shall be responsible for obtaining the sample according to the "PFP Hot-Mix Asphalt Random Jobsite Sampling" procedure.

Density: The Engineer will identify the random locations for each density testing interval. The Contractor shall be responsible for obtaining the four inch cores within the same day and prior to opening to traffic unless otherwise approved by the Engineer according to the "PFP and QCP Random Density Procedure". The locations will be identified after final rolling and cores shall be obtained under the supervision of the Engineer. All core holes shall be filled immediately upon completion of coring. All water shall be removed from the core holes prior to filling. All core holes shall be filled with a rapid hardening mortar or concrete which shall be mixed in a separate container prior to placement in the hole. Any depressions in the surface of the filled core holes greater than 1/4 inch at the time of final inspection will require removal of the fill material to the depth of the lift thickness and replacement.

The Engineer will witness and secure all mixture and density samples. The Contractor shall transport the secured sample to a location designated by the Engineer.

The Engineer will test one or all of the randomly selected split samples from each lot for voids, field VMA and dust/AC ratio. The Engineer will test a minimum of one sample per project. The Engineer will test all of the pavement cores for density. All QA testing will be performed in a qualified laboratory by personnel who have successfully completed the Department's HMA Level I training. QA test results will be available to the Contractor within 10 working days from receipt of secured cores and split mixture samples.

The Engineer will maintain a complete record of all Department test results and copies will be provided to the Contractor with each set of sublot results. The records will contain, as a minimum, the originals of all Department test results and raw data, random numbers used and resulting calculations for sampling locations, and quality level analysis calculations.

If the QA results do not meet the 100% sublot pay factor limits or do not compare to QC results within the precision limits listed below, the Engineer will test all split mix samples for the lot.

Test Parameter	Limits of Precision
G_{mb}	0.030
G_{mm}	0.026
Field VMA	1.0 %

Acceptance by the Engineer: All of the Department's tests shall be within the acceptable limits listed below:

Parameter		Acceptable Limits
Field VMA		-1.0 – +3.0%[1/]
Voids		2.0 – 6.0%
Density:	IL-9.5, IL-12.5, IL-19.0, IL-25.0, IL-4.75, IL-9.5FG[3/]	90.0 – 98.0%
	SMA	92.0 – 98.0%
Dust / AC Ratio		0.4 – 1.6[2/]

1/ Based on minimum required VMA from mix design
2/ Does not apply to SMA.
3/ Acceptable density limits for IL-9.5FG placed less than 1.25 in. shall be 89.0% - 98.0%

In addition, no visible pavement distresses shall be present such as, but not limited to, segregation, excessive coarse aggregate fracturing or flushing.

Basis of Payment: Payment will be based on the calculation of the Composite Pay Factor using QA results for each mix according to the "QCP Payment Calculation" document.

Dust / AC Ratio. A monetary deduction will be made using the pay adjustment table below for dust/AC ratios that deviate from the 0.6 to 1.2 range. If the tested sublot is outside of this range, the Department will test the remaining sublots for Dust / AC pay adjustment.

Dust / AC Pay Adjustment Table[1/]

Range	Deduct / sublot
$0.6 \le X \le 1.2$	$0
$0.5 \le X < 0.6$ or $1.2 < X \le 1.4$	$1000
$0.4 \le X < 0.5$ or $1.4 < X \le 1.6$	$3000
$X < 0.4$ or $X > 1.6$	Shall be removed and replaced

1/ Does not apply to SMA.

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1)
Effective: November 1, 2012
Revise: January 2, 2015

Revise Section 1031 of the Standard Specifications to read:

"**SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES**

1031.01 Description. Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

(a) Reclaimed Asphalt Pavement (RAP). RAP is the material resulting from cold milling or crushing an existing hot-mix asphalt (HMA) pavement. RAP will be considered processed FRAP after completion of both crushing and screening to size. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction.

(b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Bureau of Materials and Physical Research Policy Memorandum "Reclaimed Asphalt Shingle (RAS) Sources", by weight of RAS. All RAS used shall come from a Bureau of Materials and Physical Research approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 90 percent passing the #4 (4.75 mm) sieve . RAS shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.

(1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.

(2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

1031.02 Stockpiles. RAP and RAS stockpiles shall be according to the following.

(a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. Additional processed RAP (FRAP) shall be stockpiled in a separate working pile, as designated in the QC Plan, and only added to the sealed stockpile when test results for the working pile are complete and are found to meet tolerances specified herein for the original sealed FRAP stockpile. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and FRAP) shall be identified by signs indicating the type as listed below (i.e. “Non- Quality, FRAP -#4 or Type 2 RAS”, etc…).

(1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. All FRAP shall be processed prior to testing and sized into fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP in the coarse fraction shall pass the maximum sieve size specified for the mix the FRAP will be used in.

(2) Restricted FRAP (B quality) stockpiles shall consist of RAP from Class I, Superpave (High ESAL), or HMA (High ESAL). If approved by the Engineer, the aggregate from a maximum 3.0 inch single combined pass of surface/binder milling will be classified as B quality. All millings from this application will be processed into FRAP as described previously.

(3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed (FRAP) prior to testing. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.

(4) Conglomerate “D” Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from HMA shoulders, bituminous stabilized subbases or Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture. The coarse aggregate in this RAP may be crushed or round but shall be at least D quality. This RAP may have an inconsistent gradation and/or asphalt binder content. Conglomerate DQ RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.

(5) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as “Non-Quality”.

RAP or FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, plant cleanout etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

(b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall be sufficiently separated to prevent intermingling at the base. Each stockpile shall be signed indicating what type of RAS is present.

However, a RAS source may submit a written request to the Department for approval to blend mechanically a specified ratio of type 1 RAS with type 2 RAS. The source will not be permitted to change the ratio of the blend without the Department prior written approval. The Engineer's written approval will be required, to mechanically blend RAS with any fine aggregate produced under the AGCS, up to an equal weight of RAS, to improve workability. The fine aggregate shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The fine aggregate shall be one that is approved for use in the HMA mixture and accounted for in the mix design and during HMA production.

Records identifying the shingle processing facility supplying the RAS, RAS type and lot number shall be maintained by project contract number and kept for a minimum of three years.

1031.03 Testing. FRAP and RAS testing shall be according to the following.

(a) FRAP Testing. When used in HMA, the FRAP shall be sampled and tested either during processing or after stockpiling. It shall also be sampled during HMA production.

(1) During Stockpiling. For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).

(2) Incoming Material. For testing as incoming material, washed extraction samples shall be run at a minimum frequency of one sample per 2000 tons (1800 metric tons) or once per week, whichever comes first.

(3) After Stockpiling. For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Before extraction, each field sample of FRAP, shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

(b) RAS Testing. RAS shall be sampled and tested during stockpiling according to Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources". The Contractor shall also sample as incoming material at the HMA plant.

(1) During Stockpiling. Washed extraction and testing for unacceptable materials shall be run at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1000 tons (900 metric tons) and one sample per 1000 tons (900 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). Once a ≤ 1000 ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS shall be in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.

(2) Incoming Material. For testing as incoming material at the HMA plant, washed extraction shall be run at the minimum frequency of one sample per 250 tons (227 metric tons). A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). The incoming material test results shall meet the tolerances specified herein.

The Contractor shall obtain and make available all test results from start of the initial stockpile sampled and tested at the shingle processing facility in accordance with the facility's QC Plan.

Before extraction, each field sample shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

1031.04 Evaluation of Tests. Evaluation of tests results shall be according to the following.

(a) Evaluation of FRAP Test Results. All test results shall be compiled to include asphalt binder content, gradation and, when applicable (for slag), G_{mm}. A five test average of results from the original pile will be used in the mix designs. Individual extraction test results run thereafter, shall be compared to the average used for the mix design, and will be accepted if within the tolerances listed below.

Parameter	FRAP
No. 4 (4.75 mm)	± 6 %
No. 8 (2.36 mm)	± 5 %
No. 30 (600 μm)	± 5 %
No. 200 (75 μm)	± 2.0 %
Asphalt Binder	± 0.3 %
G_{mm}	± 0.03 1/

1/ For stockpile with slag or steel slag present as determined in the current Manual of Test Procedures Appendix B 21, "Determination of Reclaimed Asphalt Pavement Aggregate Bulk Specific Gravity".

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the FRAP stockpile shall not be used in Hot-Mix Asphalt unless the FRAP representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

The Contractor shall maintain a representative moving average of five tests to be used for Hot-Mix Asphalt production.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the Illinois Test Procedure, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)" or Illinois Modified AASHTO T-164-11, Test Method A.

(b) Evaluation of RAS Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content and gradation. A five test average of results from the original pile will be used in the mix designs. Individual test results run thereafter, when compared to the average used for the mix design, will be accepted if within the tolerances listed below.

Parameter	RAS
No. 8 (2.36 mm)	± 5 %
No. 16 (1.18 mm)	± 5 %
No. 30 (600 µm)	± 4 %
No. 200 (75 µm)	± 2.5 %
Asphalt Binder Content	± 2.0 %

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the RAS shall not be used in Hot-Mix Asphalt unless the RAS representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

(c) Quality Assurance by the Engineer. The Engineer may witness the sampling and splitting conduct assurance tests on split samples taken by the Contractor for quality control testing a minimum of once a month.

The overall testing frequency will be performed over the entire range of Contractor samples for asphalt binder content and gradation. The Engineer may select any or all split samples for assurance testing. The test results will be made available to the Contractor as soon as they become available.

The Engineer will notify the Contractor of observed deficiencies.

Differences between the Contractor's and the Engineer's split sample test results will be considered acceptable if within the following limits.

Test Parameter	Acceptable Limits of Precision	
% Passing:[1/]	FRAP	RAS
1 / 2 in.	5.0%	
No. 4	5.0%	
No. 8	3.0%	4.0%
No. 30	2.0%	3.0%
No. 200	2.2%	2.5%
Asphalt Binder Content	0.3%	1.0%
G_{mm}	0.030	

1/ Based on washed extraction.

In the event comparisons are outside the above acceptable limits of precision, the Engineer will immediately investigate.

(d) Acceptance by the Engineer. Acceptable of the material will be based on the validation of the Contractor's quality control by the assurance process.

1031.05 Quality Designation of Aggregate in RAP and FRAP.

(a) RAP. The aggregate quality of the RAP for homogenous, conglomerate, and conglomerate "D" quality stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.

(1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.

(2) RAP from Superpave/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D quality coarse aggregate.

(3) RAP from Class I, Superpave/HMA (High ESAL) binder mixtures, bituminous base course mixtures, and bituminous base course widening mixtures are designated as containing Class C quality coarse aggregate.

(4) RAP from bituminous stabilized subbase and BAM shoulders are designated as containing Class D quality coarse aggregate.

(b) FRAP. If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer.

If the quality is not known, the quality shall be determined as follows. Fractionated RAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5,000 tons (4,500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant prequalified by the Department for the specified testing. The consultant shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the BMPR Aggregate Lab for MicroDeval Testing, according to Illinois Modified AASHTO T 327. A maximum loss of 15.0 percent will be applied for all HMA applications. The fine aggregate portion of the fractionated RAP shall not be used in any HMA mixtures that require a minimum of "B" quality aggregate or better, until the coarse aggregate fraction has been determined to be acceptable thru a MicroDeval Testing.

1031.06 Use of FRAP and/or RAS in HMA. The use of FRAP and/or RAS shall be a Contractor's option when constructing HMA in all contracts.

(a) FRAP. The use of FRAP in HMA shall be as follows.

(1) Coarse Aggregate Size (after extraction). The coarse aggregate in all FRAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.

(2) Steel Slag Stockpiles. FRAP stockpiles containing steel slag or other expansive material, as determined by the Department, shall be homogeneous and will be approved for use in HMA (High ESAL and Low ESAL) mixtures regardless of lift or mix type.

(3) Use in HMA Surface Mixtures (High and Low ESAL). FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall have coarse aggregate that is Class B quality or better. FRAP shall be considered equivalent to limestone for frictional considerations unless produced/screened to minus 3/8 inch.

(4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP in which the coarse aggregate is Class C quality or better.

(5) Use in Shoulders and Subbase. FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, Restricted FRAP, conglomerate, or conglomerate DQ.

(b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.

(c) FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with FRAP in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

When FRAP is used alone or FRAP is used in conjunction with RAS, the percent of virgin asphalt binder replacement (ABR) shall not exceed the amounts indicated in the table below for a given N Design.

Max Asphalt Binder Replacement for FRAP with RAS Combination

HMA Mixtures [1/ 2/]	Maximum % ABR		
Ndesign	Binder/Leveling Binder	Surface	Polymer Modified [3/]
30L	50	40	10
50	40	35	10
70	40	30	10
90	40	30	10[4/]
4.75 mm N-50			30
SMA N-80			20

1/ For HMA "All Other" (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.

2/ When the binder replacement exceeds 15 percent for all mixes, except for SMA and IL-4.75, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement using a virgin asphalt binder grade of PG64-22 will be reduced to a PG58-28). When constructing full depth HMA and the ABR is less than 15 percent, the required virgin asphalt binder grade shall be PG64-28.

3/ When the ABR for SMA or IL-4.75 is 15 percent or less, the required virgin asphalt binder shall be SBS PG76-22 and the elastic recovery shall be a minimum of 80. When the ABR for SMA or IL-4.75 exceeds 15%, the virgin asphalt binder grade shall be SBS PG70-28 and the elastic recovery shall be a minimum of 80.

4/ For polymerized surface mix used for overlays, with up to 10 percent ABR, an SBS PG70-22 will be required. However if used in full depth HMA, an SBS PG70-28 will be required.

1031.07 HMA Mix Designs. At the Contractor's option, HMA mixtures may be constructed utilizing RAP/FRAP and/or RAS material meeting the detailed requirements specified herein.

(a) FRAP and/or RAS. FRAP and /or RAS mix designs shall be submitted for verification. If additional FRAP or RAS stockpiles are tested and found to be within tolerance, as defined under "Evaluation of Tests" herein, and meet all requirements herein, the additional FRAP or RAS stockpiles may be used in the original design at the percent previously verified.

(b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design. A RAS stone bulk specific gravity (Gsb) of 2.300 shall be used for mix design purposes.

1031.08 HMA Production. HMA production utilizing FRAP and/or RAS shall be as follows.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAS and FRAP feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by the Engineer.

If during mix production, corrective actions fail to maintain FRAP, RAS or QC/QA test results within control tolerances or the requirements listed herein the Contractor shall cease production of the mixture containing FRAP or RAS and conduct an investigation that may require a new mix design.

(a) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.

(b) HMA Plant Requirements. HMA plants utilizing FRAP and/or RAS shall be capable of automatically recording and printing the following information.

(1) Dryer Drum Plants.

a. Date, month, year, and time to the nearest minute for each print.

b. HMA mix number assigned by the Department.

c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

d. Accumulated dry weight of RAS and FRAP in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.

f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.

g. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.

h. Aggregate RAS and FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS and FRAP are printed in wet condition.)

i. When producing mixtures with FRAP and/or RAS, a positive dust control system shall be utilized.

j. Accumulated mixture tonnage.

k. Dust Removed (accumulated to the nearest 0.1 ton)

(2) Batch Plants.

a. Date, month, year, and time to the nearest minute for each print.

b. HMA mix number assigned by the Department.

c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).

d. Mineral filler weight to the nearest pound (kilogram).

f. RAS and FRAP weight to the nearest pound (kilogram).

g. Virgin asphalt binder weight to the nearest pound (kilogram).

h. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

(a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except "Non-Quality" and "FRAP". The testing requirements of Article 1031.03 shall not apply. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications"

(b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders."

SLIPFORM PAVING (D-1)
Effective: November 1, 2014

Revise Article 1020.04 Table 1, Note (5) of Standard Specifications to read:

"The slump range for slipform construction shall be 1/2 to 1 1/2 in."

Revise Article 1020.04 Table 1 (metric), Note (5) of Standard Specifications to read:

"The slump range for slipform construction shall be 13 to 40 mm."

STORM SEWER ADJACENT TO OR CROSSING WATER MAIN
Effective: February 1, 1996
Revised: January 1, 2007

This work consists of constructing storm sewer adjacent to or crossing a water main, at the locations shown on the plans. The material and installation requirements shall be according to the latest edition of the "Standard Specifications for Water and Sewer Main Construction in Illinois", and the applicable portions of Section 550 of the Standard Specifications; which may include concrete collars and encasing pipe with seals if required.

Pipe materials shall meet the requirements of Sections 40 and 41-2.01 of the "Standard Specifications for Water and Sewer Main Construction in Illinois", except PVC pipe will not be allowed. Ductile-Iron pipe shall meet the minimum requirements for Thickness Class 50.

Encasing of standard type storm sewer, according to the details for "Water and Sewer Separation Requirements (Vertical Separation)" in the "STANDARD DRAWINGS" Division of the "Standard Specifications for Water and Sewer Main Construction in Illinois", may be used for storm sewers crossing water mains.

Basis of Payment: This work will be paid according to Article 550.10 of the Standard Specifications, except the pay item shall be STORM SEWER (WATER MAIN REQUIREMENTS), of the diameter specified.

STORM SEWERS AND SEWER CONNECTIONS TO CITY OF CHICAGO SEWERS
Created: September 30, 1985
Revised: January 1, 2007

This work consists of constructing storm sewers or sewer connections to City of Chicago sewers, in accordance with Section 550 of the Standard Specifications and the details shown in the plans at the locations shown on the plans.

All storm sewers and sewer connections 21 inches (525 mm) in diameter and smaller shall be best quality tile socket pipe conforming to the specifications for Extra Strength Clay Pipe, ASTM C 700, except as otherwise specified on the plans. Sewer pipes shall be gasketed in such a manner as to produce a compression type joint conforming to the requirements of ASTM C 425.

All storm sewer 24 inches (600 mm) in diameter or larger shall be reinforced concrete pipe conforming to the requirements of C-76, Class-III, wall "B" with "O-Ring" joints. Joints for catch basin and inlet connections shall be packed with oakum, caulked and beveled off with portland cement mortar.

Basis of Payment. This work will be measured and paid for at the contract unit price per foot (meter) for STORM SEWER in accordance with Articles 550.09 and 550.10 of the Standard Specifications.

CLEANING EXISTING DRAINAGE STRUCTURES
Effective: September 30, 1985
Revised: December 1, 2011

All existing storm sewers, pipe culverts, manholes, catch basins and inlets shall be considered as drainage structures insofar as the interpretation of this Special Provision is concerned. When specified for payment, the location of drainage structures to be cleaned will be shown on the plans.

All existing drainage structures which are to be adjusted or reconstructed shall be cleaned according to Article 602.15 of the Standard Specifications. This work will be paid for according to accordance with Article 602.16 of the Standard Specifications.

All other existing drainage structures which are specified to be cleaned on the plans will be cleaned according to Article 602.15 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for STORM SEWERS TO BE CLEANED, of the diameter specified.

ADJUSTMENTS AND RECONSTRUCTIONS
Effective: March 15, 2011

Revise the first paragraph of Article 602.04 to read:

"**602.04 Concrete.** Cast-in-place concrete for structures shall be constructed of Class SI concrete according to the applicable portions of Section 503. Cast-in-place concrete for pavement patching around adjustments and reconstructions shall be constructed of Class PP-1 concrete, unless otherwise noted in the plans, according to the applicable portions of Section 1020."

Revise the third, fourth and fifth sentences of the second paragraph of Article 602.11(c) to read:

"Castings shall be set to the finished pavement elevation so that no subsequent adjustment will be necessary, and the space around the casting shall be filled with Class PP-1 concrete, unless otherwise noted in the plans, to the elevation of the surface of the base course or binder course. HMA surface or binder course material shall not be allowed. The pavement may be opened to traffic according to Article 701.17(e)(3)b."

Revise Article 603.05 to read:

"**603.05 Replacement of Existing Flexible Pavement.** After the castings have been adjusted, the surrounding space shall be filled with Class PP-1 concrete, unless otherwise noted in the plans, to the elevation of the surface of the base course or binder course. HMA surface or binder course material shall not be allowed. The pavement may be opened to traffic according to Article 701.17(e)(3)b."

Revise Article 603.06 to read:

"**603.06 Replacement of Existing Rigid Pavement.** After the castings have been adjusted, the pavement and HMA that was removed, shall be replaced with Class PP-1 concrete, unless otherwise noted in the plans, not less than 9 in. (225 mm) thick. The pavement may be opened to traffic according to Article 701.17(e)(3)b.

The surface of the Class PP concrete shall be constructed flush with the adjacent surface."

Revise the first sentence of Article 603.07 to read:

"**603.07 Protection Under Traffic.** After the casting has been adjusted and the Class PP concrete has been placed, the work shall be protected by a barricade and two lights according to Article 701.17(e)(3)b."

REMOVE IMPACT ATTENUATOR SAND MODULE

Description. This work shall consist of removing existing sand module impact attenuators at locations as specified in the Plans.

Construction Requirement. When the Engineer determines the existing impact attenuators are no longer required, the installation shall be dismantled and removed with all hardware becoming the property of the Contractor.

When impact attenuators have been anchored to the pavement, the anchor holes shall be repaired with rapid set mortar with only enough water to permit placement. Consolidation by rodding shall be used and the material shall be struck-off flush.

Method of Measurement and Basis of Payment. This work will be measured for payment at the contract unit price per each for REMOVE IMPACT ATTENUATOR SAND MODULE, where each is defined as one complete installation.

CONCRETE MEDIAN SURFACE REMOVAL

Description. This work consists of removing and disposing existing concrete median surfaces (regardless of thickness) at locations shown on the plans in accordance with the applicable portions of Section 440 of the Standard Specifications.

Method of Measurement. CONCRETE MEDIAN SURFACE REMOVAL will be measured in place in square feet.

Basis of Payment. This work will be paid for at the contract unit price per square foot for CONCRETE MEDIAN SURFACE REMOVAL, which price shall include all labor and equipment necessary to remove and dispose of the existing median surface.

FENCE REMOVAL

Description. This work shall consist of removing and disposing the existing fence of all kinds as shown in the Plans or otherwise directed by the Engineer. The removal of gates installed along sections of existing fence is considered under this item. Existing fence and gates include wrought iron, steel aluminum or chain link fence installations.

Construction Requirements. No removal work shall be completed without the approval of the Engineer. All associated hardware and appurtenances of the existing fence including but not limited to post foundations, fittings, gates, post, and accessories, shall be removed off-site and disposed of by the Contractor in a legal disposal site. All postholes shall be backfilled and compacted to the satisfaction of the Engineer. Any part of the fence that is damaged that is not called out for to be removed shall be replaced at the Contractor's expense.

Any posts identified to remain must be protected from damage during the removal of adjacent fence or gates.

Method of Measurement. Fence removal shall be measured for payment in feet of FENCE REMOVAL and measured along the top of the fence from center to center of end post, including the length occupied by gates.

Basis of Payment. This work will be paid for at the contract unit price per foot for FENCE REMOVAL, at the specified locations. Additionally, this price shall include all equipment, labor, and materials necessary to remove and dispose of the existing fence of all kinds, including but not limited to wrought iron, steel aluminum, or chain link installations and their associated fence hardware, and appurtenances.

TEMPORARY CHAIN LINK FENCE

Description. This work shall consist of furnishing, installing, maintaining and removing temporary chain link fence and gates. Temporary chain link fence shall be used to provide access control around the work zone to discourage vehicles and pedestrians from entering the Contractor's work area. The fence and gates are to be installed at locations as specified on the plans, or as directed by the Engineer. Work under this item shall be performed according to section 664 of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

General Requirements. The Temporary Chain Link Fence shall be at least 8 feet in height. The Temporary Chain Link Fence shall be self-standing without the need to disturb the surface ground by excavation. The stand shall be made of galvanized steel pipe or similar materials. Each fence panel shall be made from welded wire panels or out of chain link fence materials. All the necessary bases, panel clamps and bolts shall be included and installed in accordance to the manufacturer specifications and to the satisfaction of the Engineer.

The Temporary Chain Link Fence shall utilize opaque fabric meshing affixed to the chain link fence face. The fabric meshing shall allow passage of air but shall contain dust and dirt. The mesh fabric shall be the full height of the fence and cover the entire length of the fence including any gated opening. The fabric meshing and fence shall not contain any advertisement. The color of the fabric shall be approved by the Engineer.

Method of Measurement. Temporary Chain Link Fence shall be measured for payment in feet, along the top of the fence from center to center of end posts, including the length occupied by gates.

Basis of Payment. Temporary Chain Link Fence will be paid for at the contract unit price per foot for TEMPORARY CHAIN LINK FENCE for which said price shall include all labor, materials, equipment, furnishing, installing, maintaining and incidentals necessary for placement and removal and disposal of the temporary chain link fence and gates. Access gates will not be paid for separately but shall be included in the cost of TEMPORARY CHAIN LINK FENCE.

REMOVE AND RESET ORNAMENTAL FENCE

Description. This work shall consist of removal, salvaging, storing, cleaning, repairing, painting and re-installation of the existing ornamental metal fence, furnishing new hardware, welding, brackets, post sleeves, reinstallation of fence on new concrete foundations at locations as specified on the plans, and disposing of the existing post foundations and fence material not used in reinstallation of the existing fence, as shown in the Plans or otherwise directed by the Engineer.

Where the existing ornamental fence will not impede the proposed bridge construction, the Contractor may opt to allow the fence to remain in-place while providing protection of the fence to prevent damage in lieu of removal and reinstallation of the fence. The Contractor must receive approval by the Engineer for allowing the existing fence to remain during construction. The cost of protecting the existing fence will not be paid for separately but will be included in the cost of the contract.

Materials.

(a) Concrete
Concrete for construction of the post foundations shall be according to Section 503. Concrete Structures, of the IDOT Standard Specifications for Road and Bridge Construction, with minimum specified 28-Day compressive strength of 30 MPa.

(b) Metal Fence
The Contractor shall re-use the existing salvaged ornamental fence panels and posts. The existing ornamental panel includes: decorative cut plate attached to metal frame consisting of horizontal top and bottom rail and vertical supports. The Contractor shall supply new brackets, accessories, hardware, post sleeves and post caps to match the existing.

(c) Paint Finish:
High –Build Decorative Polyurethane Coating: Work under this item shall be performed in accordance with Section 505, 506 and 509 of the IDOT Standard Specifications for Road and Bridge Construction, and as recommended by the paint manufacturer.

(1) Acceptable manufactures and products:

International:
- Interzink 52 – Two component, metallic zinc rich epoxy primer
- Interhane 990HS – Two component acrylic polyurethane high performance finish coat

Carboline:
- Carboguard 893SG (2 coats, 3-5 mils per coat) primer gray color
- Carboline 134 HG (1 coat, 2-3 mils) Custom color
- Top Coat: Carbothane 130 (1coat, 1-2 mils) clear coat

PPG Industries:
- 97-145 PittGuard DTR - Epoxy Primer
- 95-812 Pitthane Ultra - Ultra Gloss Urethane Enamels

Approved Equal

(2) The color shall match existing decorative fence.

Construction Requirements.

(a) Removal and Salvage of Ornamental Fence Panels.

This work shall be performed according to section 501. Removal of Existing Structures, of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

Removal work shall be completed prior to commencement of any other work under this contract at the adjacent location.

The Contractor shall submit pre-removal photographs to the Engineer prior to the commencement of Project work to show existing conditions of adjoining construction. The Contractor shall proceed with removal systematically; verify and record existing location of fence and post foundation, all relevant dimensions and elevations prior to removal of the fence. All ornamental panels shall be properly matchmarked prior to removal.

The fence panels shall be removed and handled by methods which prevent twisting, distortion or other damage. The Contractor shall use cutting methods least likely to damage remaining or adjoining construction; use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of existing surfaces. The use of heat and flammable tools while disassembling the panels is not allowed.

All associated hardware and appurtenances of the existing fence including but not limited to post base / sleeve, brackets and accessories, shall be removed off-site and disposed of by the Contractor.

Any part of the fence that is damaged that is called out to be salvaged or to remain shall be replaced at the Contractor's expense.

The Contractor shall remove existing foundations and other below grade structures that are in conflict with the proposed improvements completely unless otherwise indicated on the Plans or as directed by the Engineer. The Contractor shall fill below grade areas and voids resulting from demolition of structures with granular fill materials. Prior to placement of fill materials, the Contractor shall ensure that the areas to be filled are free of standing water, frost, frozen material, trash, and debris. Backfilling and grading related to demolition of foundation is included in the cost of REMOVE AND RESET ORNAMENTAL FENCE.

(b) Storage of Salvaged Materials

The Contractor shall store salvaged materials in a secure area out of contact with the ground and under weathertight covering; transport materials to an approved storage area on or off-site; and protect materials from damage during transport and storage.

(c) Re-installation of Ornamental Fence

The Contractor shall clean all metal materials to be reused. All oil, grease, dirt, rust, old paint and foreign matter to be completely removed from the surface by abrasive blasting to comply with SP6/NACE 3 Commercial Blast Cleaning. All work shall be performed according to Section 506 for Cleaning and Painting Steel Structures of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

The Contractor shall repair and replace, if needed, materials to functional condition adequate for intended reuse; paint fence to match the color of existing fence; protect materials from damage during transport and storage; and reinstall items in locations indicated on the drawings, complying with installation requirements for new materials and equipment and providing connections, supports, and miscellaneous materials necessary to make item functional for reuse.

Post foundation holes shall be constructed to the required depth on the existing established alignment and at the required spacing according to the dimensions and elevations documented prior to removal of the fence. The top of the concrete foundations shall be domed to shed water.

Fence shall be re-installed at the existing location unless otherwise directed by the Engineer.

Submittals.

The Contractor shall submit shop drawings for the re-installation of the ornamental fence for review and approval by the Engineer.

The fabrication and erection drawings shall bear the seal and signature of a Professional structural Engineer licensed to practice in the State of Illinois.

Shop drawings to indicate at a minimum the following information:

- Fabrication and erection details including plans, elevations and typical sections, materials to be used and applicable specifications including connection details, post spacing, etc.

Fabrication and erection drawings for foundations and post connections.

- Supporting design calculations including full details on the fencing system and foundations

Submit the following Shop Drawing for Engineer's review and approval:

- Paint Product data on each specific product describing physical and performance characteristics and colors available. List each product and cross-reference the specific coating and finish system and application.
- Samples for Verification: For the type of coating system and in each color selected in semi-gloss and high gloss of topcoat indicated. Submit Samples on rigid backing, 8 inches square.
- Submit three samples, 12 x 12 inch (300 x 300 mm) in size illustrating selected color and texture selected.

Maintenance Material Submittals

Furnish extra materials: 1 gal. of each material and color applied from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

Method of Measurement. REMOVE AND RESET ORNAMENTAL FENCE shall be measured for payment in feet, along the top of the fence from center to center of end posts.

Basis of Payment. REMOVE AND RESET ORNAMENTAL FENCE will be paid for at the contract unit price per foot for which said price shall include full compensation for all labor, equipment and material to complete the required work, including: Field survey of the existing conditions; Preparation of shop drawings and other submissions identified in this specification; Removal, salvage, and storage of existing fence panels and posts; Removal and disposal of all existing fence materials not re-used; Excavation required to construct the post foundations; Supply and installation of new metal fence components in accordance with this specification; Supply and place concrete foundations, and repair, painting and re-installation of salvaged fence panels and posts.

PROTECTION OF EXISTING TREES

The Contractor shall be responsible for taking measures to minimize damage to the tree limbs, tree trunks, and tree roots at each work site. All such measures shall be included in the contract price for other work except that payment will be made for TEMPORARY FENCE, TREE ROOT PRUNING, and TREE PRUNING.

All work, materials and equipment shall conform to Section 201 and 1081 of the Standard Specifications except as modified herein.

A. Earth Saw Cut of Tree Roots (Root Pruning):

1. Whenever proposed excavation falls within a drip-line of a tree, the Contractor shall:

   a. Root prune 6-inches behind and parallel to the proposed edge of trench a neat, clean vertical cut to a minimum depth directed by the Engineer through all affected tree roots.

   b. Root prune to a maximum width of 4-inches using a “Vermeer” wheel, or other similar machine. Trenching machines will not be permitted.

   c. Exercise care not to cut any existing utilities.

   d. If during construction it becomes necessary to expose tree roots which have not been precut, the Engineer shall be notified and the Contractor shall provide a clean, vertical cut at the proper root location, nearer the tree trunk, as necessary, by means of hand-digging and trimming with chain saw or hand saw. Ripping, shredding, shearing, chopping or tearing will not be permitted.

   e. Top Pruning: When thirty percent (30%) or more of the root zone is pruned, an equivalent amount of the top vegetative growth or the plant material shall be pruned off within one (1) week following root pruning.

2. Whenever curb and gutter is removed for replacement, or excavation for removal of or construction of a structure is within the drip line/root zone of a tree, the Contractor shall:

    a. Root prune 6-inches behind the curbing so as to neatly cut the tree roots.

    b. Depth of cut shall be 12 inches for curb removal and replacement and 24 inches for structural work. Any roots encountered at a greater depth shall be neatly saw cut at no additional cost.

    c. Locations where earth saw cutting of tree roots is required will be marked in the field by the Engineer.

3. All root pruning work is to be performed through the services of a licensed arborist to be approved by the Engineer.

Root pruning will be paid for at the contract unit price each for TREE ROOT PRUNING, which price shall be payment for all labor, materials and equipment.

Tree limb pruning will be paid for at the contract unit price per each for TREE PRUNING (1 TO 10 INCH DIAMETER) and/or TREE PRUNING (OVER 10 INCH DIAMETER), which price shall included labor, materials, and equipment.

B. Temporary Fence:

1. The Contractor shall erect a temporary fence around all trees within the construction area to establish a “tree protection zone” before any work begins or any material is delivered to the jobsite. No work is to be performed (other than root pruning), materials stored or vehicles driven or parked within the “tree protection zone”.

2. The exact location and establishment of the “tree protection zone” fence shall be approved by the Engineer prior to setting the fence.

3. The fence shall be erected on three sides of the tree at the drip-line of the tree or as determined by the Engineer.

4. All work within the “tree protection zone” shall have the Engineer’s prior approval. All slopes and other areas not regarded should be avoided so that unnecessary damage is not done to the existing turf, tree root system ground cover.

5. The grade within the “tree protection zone” shall not be changed unless approved by the Engineer prior to making said changes or performing the work.

The fence shall be similar to wood lath snow fence (48 inches high), plastic poly-type or and other type of highly visible barrier approved by the Engineer. This fence shall be properly maintained and shall remain up until final restoration, unless the Engineer directs removal otherwise. Tree fence shall be supported using T-Post style fence posts. **Utilizing re-bar as a fence post will not be permitted.**

Temporary fence will be paid for at the contract unit price per foot for TEMPORARY FENCE, which price shall include furnishing, installing, maintaining, and removing.

C. Tree Limb Pruning:

1. The Contractor shall inspect the work site in advance and arrange with the Roadside Development Unit (847.705.4171) to have any tree limbs pruned that might be damaged by equipment operations at least one week prior to the start of construction. Any tree limbs that are broken by construction equipment after the initial pruning must be pruned correctly within 72 hours.

2. Top Pruning: When thirty percent (30%) or more of the root zone of a tree is pruned, an equivalent amount of the top vegetative growth or the plant material shall be pruned off within one (1) week following root pruning.

Tree limb pruning will be paid for at the contract unit price per each for TREE PRUNING (1 TO 10 INCH DIAMETER) and/or TREE PRUNING (OVER 10 INCH DIAMETER), which price shall included labor, materials, and equipment.

D. Removal of Driveway Pavement and Sidewalk:

1. In order to minimize the potential damage to the tree root system(s), the Contractor will not be allowed to operate any construction equipment or machinery within the “tree protection zone” located between the curb or edge of pavement and the right-of-way property line.

2. Sidewalk to be removed in the areas adjacent to the “tree protection zones” shall be removed with equipment operated from the street pavement. Removal equipment shall be Gradall (or similar method), or by hand or a combination of these methods. The method of removal shall be approved by the Engineer prior to commencing any work.

3. Any pavement or pavement related work that is removed shall be immediately disposed of from the area and shall not be stockpiled or stored within the parkway area under any circumstances.

E. Backfilling:

1. Prior to placing the topsoil and/or sod, in areas outside the protection zone, the existing ground shall be disked to a depth no greater than one (1”), unless otherwise directed by the Engineer. No grading will be allowed within the drip-line of any tree unless directed by the Engineer.

F. Damages:

1. In the event that a tree not scheduled for removal is injured such that potential irreparable damage may ensure, as determined by the Roadside Development Unit, the Contractor shall be required to remove the damage tree and replace it on a three to one (3:1) basis, at his own expense. The Roadside Development Unit will select replacement trees from the pay items already established in the contract.

2. The Contractor shall place extreme importance upon the protection and care of trees and shrubs which are to remain during all times of this improvement. It is of paramount importance that the trees and shrubs which are to remain are adequately protected by the Contractor and made safe from harm and potential damage from the operations and construction of this improvement. If the Contractor is found to be in violation of storage or operations within the "tree protection zone" or construction activities not approved by the Engineer, a penalty shall be levied against the Contractor with the monies being deducted from the contract. The amount of the penalty shall be two hundred fifty dollars ($250.00) per occurrence per day.

TEMPORARY PAVEMENT

Description. This work shall consist of constructing a temporary pavement at the locations shown on the Plans or as directed by the Engineer.

The Contractor shall use either Portland cement concrete (PCC) according to Sections 353 and 354 of the Standard Specifications or hot-mix asphalt (HMA) according to Sections 355, 356, 406 of the Standard Specifications, and other applicable PCC and HMA special provisions as contained herein. The HMA mixtures to be used shall be specified in the Plans. The thickness of the Temporary Pavement shall be as described in the Plans. The Contractor shall have the option of constructing either material type if both Portland cement concrete and HMA are shown in the Plans. The Contractor shall furnish and construct Subbase Granular Material, Type B 4" under the temporary pavement in accordance with the Standard Specifications.

Articles 355.08 and 406.11 of the Standard Specifications shall not apply.

The Temporary Pavement shall remain in place unless otherwise noted on the Plans, and if so, the removal shall conform to Section 440 of the Standard Specification.

Method of Measurement. TEMPORARY PAVEMENT and SUBBASE GRANULAR MATERIAL, TYPE B 4" will be measured in place and the area computed in square yards.

Basis of Payment. This work will be paid for at the contract unit price per square yard for TEMPORARY PAVEMENT and SUBBASE GRANULAR MATERIAL, TYPE B 4".

Removal of temporary pavement will be paid for at the contract unit price per square yard for PAVEMENT REMOVAL.

CONCRETE BARRIER WALL (SPECIAL)

Description. This work shall consist of constructing a concrete barrier wall on a concrete barrier base with reinforcement bars as detailed in the Plans. This work also includes performing all notching as detailed in the Plans.

Construction Requirements. This work shall be done in accordance with the applicable portions of Section 637 of the Standard Specifications. The concrete barrier wall shall be constructed on a concrete barrier base as detailed in the Plans. The concrete barrier wall shall be constructed separately and not poured monothically with the concrete barrier base.

Method of Measurement. CONCRETE BARRIER WALL (SPECIAL) shall be measured for payment in feet along the centerline of the barrier. Notching of the concrete barrier wall will not be paid for separately, but shall be considered included in the cost of CONCRETE BARRIER WALL (SPECIAL).

Basis of Payment. This work will be paid for at the contract unit price per foot for CONCRETE BARRIER WALL (SPECIAL), which price shall include all equipment, labor, and materials necessary to construct the concrete barrier wall and concrete barrier base including all reinforcement bars, and performing all notching as detailed in the Plans.

TEMPORARY CONCRETE BARRIER (TO REMAIN PERMANENTLY)

Description. This work shall consist of furnishing, placing, and maintaining precast concrete barrier at locations specified in the Plans. This work shall be completed in accordance with the applicable portions of Section 704 of the Standard Specifications and as noted herein. This work shall also include anchor and connection pins, where required.

Installation. The precast concrete barrier shall be installed according to Section 704.04 of the Standard Specifications except that each barrier unit shall be secured to the pavement or shoulder using six anchoring pins. The precast concrete barrier shall not be removed at the end of the contract. After the Contract is closed, the Contractor shall leave the existing barrier in place and ownership and maintenance of barrier shall be transferred over to the Department.

Method of Measurement. TEMPORARY CONCRETE BARRIER (TO REMAIN PERMANENTLY) shall be measured for payment per foot.

Basis of Payment. This work shall be paid for at the contract unit price per foot for TEMPORARY CONCRETE BARRIER (TO REMAIN PERMANENTLY), which price shall include all labor, equipment, and materials necessary to furnish and place precast concrete barrier, including anchoring as required.

DETECTABLE WARNINGS (SPECIAL)

Description: Work under this item shall consist of installing cast iron detectable warning tiles on ADA curb ramps according to the latest Chicago Department of Transportation ADA Standards. Work shall be performed according to Section 424 of the IDOT Standard Specifications for Road and Bridge Construction, except as herein modified.

Materials: Detectable warning tiles shall be cast gray iron conforming to the following properties:

Mechanical & Chemical Properties	Required Value	Test Method
Tensile Strength	Class 30A, 30B or 35	ASTM A48 and AASHTO M105-06
Slip Resistance		ASTM C-1028
Proof Load Test		AASHTO M306-07

The cast iron material and detectable warning system shall be tested by an independent testing laboratory for chemical resistance and mechanical properties.

General Requirements: The cast iron detectable warning tiles shall be provided, as approved by the City of Chicago Department of Transportation, by the East Jordan Iron Works, the Neenah Foundry or equivalent with an untreated surface finish as directed by the Engineer.
The contractor shall ensure a watertight installation around the edge of the cast iron detectable warning tiles.

Submittals:

- The Manufacturer shall provide the Engineer with two (2) samples (minimum 8” square) of the tile type proposed for use.
- The Manufacturer shall provide the Engineer with maintenance procedures for the tactile detectable warning systems.
- The Manufacturer shall provide the Engineer with the specifications for the required materials, equipment, and installation procedures.

Construction Requirements: The installation of the detectable warning system shall comply with the City of Chicago Department of Transportation Appendix B, Requirements for Openings, Construction and Repair in the Public Way, ADA Standards. The equipment and installation procedures shall be according to the Manufacturer’s specifications.

QC/QA Requirements: A Manufacturer’s written certification that the material complies with these specifications shall be provided to the Engineer.

Method of Measurement: This work will be measured for payment in place in square feet.

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

REMOVAL OF EXISTING STRUCTURES NO. 1

Description. This item shall consist of furnishing all labor, equipment and materials necessary for the removal and disposal of the existing SB I-55 structure, Structure Number 016-1055, over I-55 U-Turn, M.L.K. Drive and Donnelly Drive. The work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications, as detailed in the plans, as described herein and as directed by the Engineer.

The scope of this item shall include removal and disposal of bridge substructure elements, approach vaulted terminal structure, superstructure elements and concrete deck. This work shall also include removal and disposal of miscellaneous items appurtenant to the structures, including but not limited to deck overlay, bridge railings, fence, expansion joint materials and anchorages, partial removal of drilled shaft, drainage scuppers and down spouts, structural steel, reinforcing steel, bearings, existing conduits, conduit supports, electrical wires, junction boxes, light pole, sign structure, traffic signal, existing protective shield etc. The Contractor must submit a detailed procedure for removing the existing structures, to the Engineer for approval, prior to starting this Work.

Unless noted in the plans the Contractor shall remove existing substructure units, approach vaulted terminal structure and associated foundation and drilled shafts to a minimum depth of 1 foot below the bottom of existing footing elevation or proposed grade elevation as indicated in the plans whichever is lower.

Contractor shall monitor the condition of existing deck, especially during stage construction. Existing deck overhang, as shown in the plans, are minimum and shall be determined in the field by the Contractor. If existing overhang exceeds 2'-0, the Contractor shall evaluate if overhang brackets are required to support existing deck. The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed Structural Engineer, for approval of the Engineer prior to implementation and ordering of material.

Contractor shall coordinate with utilities to remove and/or relocate existing utilities within the work zone prior to structure removal activities. Where utilities were identified during design they are shown on the drawings. The final location of utilities is the responsibility of the Contractor and is included in Removal of Existing Structures, No. 1.

The work shall conform in every respect to all environmental, state and local regulations regarding construction requirements, the protection of adjacent properties, as well as dust and noise control.

Prior to commencing work under this Item, the Contractor shall verify the location of all existing utilities in the area. The Contractor shall submit drawings and written documentation to the Engineer of such verification. All work under this Item shall be executed in such a manner so as not to disturb or damage the existing utilities.

All materials removed under this Item shall become the property of the Contractor and shall be disposed of by the Contractor off the site and in a lawful manner meeting all IDOT Policies and Procedures.

Traffic Operations. The traffic shall remain open as detailed in the plans during demolition activities unless the Contractor has secured the necessary permits from the Illinois Department of Transportation and Chicago Department of Transportation to allow for temporary closure of lanes.

Rail Operations. The Metra Electric and Canadian National rail traffic shall remain operational during demolition activities unless the Contractor has secured necessary permits from these railroad companies to allow for temporary halting of rail traffic.

Existing Plans. See contract drawings for original plans for the existing structures involved in this work. The original plans, however, may not show all modifications that have been made to the structures over the years. The completeness of these plans is not guaranteed and no responsibility is assumed by IDOT for their accuracy. Information is furnished for the Contractor's convenience and is to be used solely at the Contractor's risk.
Method of Measurement. No separate measurement will be made for removal of existing structures.
Excavation and backfill of earth necessary to perform the removal of existing structure will not be measured for payment.

Supports for existing deck will not be measured for payment.

Basis of Payment. The work under this Item will be paid for at the Contract unit price each for REMOVAL OF EXISTING STRUCTURES NO. 1, as indicated on the Plans and as specified herein.
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REMOVAL OF EXISTING STRUCTURES NO. 2

Description. This item shall consist of furnishing all labor, equipment and materials necessary for the removal and disposal of the existing SB Lake Shore Drive to SB I-55 structure, Structure Number 016-1052, over McCormick Place Busway, Metra Electric railroad tracks, Canadian Nation railroad tracks, Mines Drive and Moe Drive. The work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications, as detailed in the plans, as described herein and as directed by the Engineer.

The scope of this item shall include removal and disposal of bridge substructure elements, approach vaulted terminal structure, retaining walls structure "H" and "I", superstructure elements and concrete deck. This work shall also include removal and disposal of miscellaneous items appurtenant to the structures, including but not limited to deck overlay, bridge railings, fence, expansion joint materials and anchorages, partial removal of drilled shaft, drainage scuppers and down spouts, structural steel, reinforcing steel, bearings, existing conduits, conduit supports, electrical wires, junction boxes, light pole, sign structure, traffic signal, existing protective shield etc. The Contractor must submit a detailed procedure for removing the existing structures, to the Engineer for approval, prior to starting this Work.

Unless noted in the plans the Contractor shall remove existing substructure units, approach vaulted terminal structure, retaining walls structure “H” and “I” and associated foundation and drilled shafts to a minimum depth of 1 foot below the bottom of existing footing elevation or proposed grade elevation as indicated in the plans whichever is lower.

Contractor shall monitor the condition of existing deck, especially during stage construction. Existing deck overhang, as shown in the plans, are minimum and shall be determined in the field by the Contractor. If existing overhang exceeds 2’-0, the Contractor shall evaluate if overhang brackets are required to support existing deck. The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed Structural Engineer, for approval of the Engineer prior to implementation and ordering of material.

Contractor shall coordinate with utilities to remove and/or relocate existing utilities within the work zone prior to structure removal activities. Where utilities were identified during design they are shown on the drawings. The final location of utilities is the responsibility of the Contractor and is included in Removal of Existing Structures, No. 2.

The work shall conform in every respect to all environmental, state and local regulations regarding construction requirements, the protection of adjacent properties, as well as dust and noise control.

Prior to commencing work under this Item, the Contractor shall verify the location of all existing utilities in the area. The Contractor shall submit drawings and written documentation to the Engineer of such verification. All work under this Item shall be executed in such a manner so as not to disturb or damage the existing utilities.

All materials removed under this Item shall become the property of the Contractor and shall be disposed of by the Contractor off the site and in a lawful manner meeting all IDOT Policies and Procedures.

Traffic Operations. The traffic shall remain open as detailed in the plans during demolition activities unless the Contractor has secured the necessary permits from the Illinois Department of Transportation and Chicago Department of Transportation to allow for temporary closure of lanes.

Rail Operations. The Metra Electric and Canadian National rail traffic shall remain operational during demolition activities unless the Contractor has secured necessary permits from these railroad companies to allow for temporary halting of rail traffic.

Existing Plans. See contract drawings for original plans for the existing structures involved in this work. The original plans, however, may not show all modifications that have been made to the structures over the years. The completeness of these plans is not guaranteed and no responsibility is assumed by IDOT for their accuracy. Information is furnished for the Contractor’s convenience and is to be used solely at the Contractor's risk.

Method of Measurement. No separate measurement will be made for removal of existing structures.

Excavation and backfill of earth necessary to perform the removal of existing structures will not be measured for payment.

Supports for existing deck will not be measured for payment.

Basis of Payment. The work under this Item will be paid for at the Contract unit price each for REMOVAL OF EXISTING STRUCTURES NO. 2, as indicated on the Plans and as specified herein.

REMOVAL OF EXISTING STRUCTURES NO. 3

Description. This item shall consist of furnishing all labor, equipment and materials necessary for the removal and disposal of the existing NB Lake Shore Drive to SB I-55 structure, Structure Number 016-1048, over Lake Shore Drive & Moe Drive. The work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications, as detailed in the plans, as described herein and as directed by the Engineer.

The scope of this item shall include removal and disposal of bridge substructure elements, approach vaulted terminal structure, partial removal of crib wall along Moe Drive, superstructure elements and concrete deck. This work shall also include removal and disposal of miscellaneous items appurtenant to the structures, including but not limited to deck overlay, bridge railings, fence, expansion joint materials and anchorages, partial removal of drilled shaft, drainage scuppers and down spouts, structural steel, reinforcing steel, bearings, existing conduits, conduit supports, electrical wires, junction boxes, light pole, sign structure, traffic signal, existing protective shield etc. The Contractor must submit a detailed procedure for removing the existing structures, to the Engineer for approval, prior to starting this Work.

Unless noted in the plans the Contractor shall remove existing substructure units, approach vaulted terminal structure and associated foundation and drilled shafts to a minimum depth of 1 foot below the bottom of existing footing elevation or proposed grade elevation as indicated in the plans whichever is lower.

Contractor shall monitor the condition of existing deck, especially during stage construction. Existing deck overhang, as shown in the plans, are minimum and shall be determined in the field by the Contractor. If existing overhang exceeds 2'-0, the Contractor shall evaluate if overhang brackets are required to support existing deck. The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed Structural Engineer, for approval of the Engineer prior to implementation and ordering of material.

Contractor shall coordinate with utilities to remove and/or relocate existing utilities within the work zone prior to structure removal activities. Where utilities were identified during design they are shown on the drawings. The final location of utilities is the responsibility of the Contractor and is included in Removal of Existing Structures, No. 3.

The work shall conform in every respect to all environmental, state and local regulations regarding construction requirements, the protection of adjacent properties, as well as dust and noise control.

Prior to commencing work under this Item, the Contractor shall verify the location of all existing utilities in the area. The Contractor shall submit drawings and written documentation to the Engineer of such verification. All work under this Item shall be executed in such a manner so as not to disturb or damage the existing utilities.

All materials removed under this Item shall become the property of the Contractor and shall be disposed of by the Contractor off the site and in a lawful manner meeting all IDOT Policies and Procedures.

Traffic Operations. The traffic shall remain open as detailed in the plans during demolition activities unless the Contractor has secured the necessary permits from the Illinois Department of Transportation and Chicago Department of Transportation to allow for temporary closure of lanes.

Rail Operations. The Metra Electric and Canadian National rail traffic shall remain operational during demolition activities unless the Contractor has secured necessary permits from these railroad companies to allow for temporary halting of rail traffic.

Existing Plans. See contract drawings for original plans for the existing structures involved in this work. The original plans, however, may not show all modifications that have been made to the structures over the years. The completeness of these plans is not guaranteed and no responsibility is assumed by IDOT for their accuracy. Information is furnished for the Contractor's convenience and is to be used solely at the Contractor's risk.
Method of Measurement. No separate measurement will be made for removal of existing structures.
Excavation and backfill of earth necessary to perform the removal of existing structures will not be measured for payment.
Supports for existing deck will not be measured for payment.

Basis of Payment. The work under this Item will be paid for at the Contract unit price each for REMOVAL OF EXISTING STRUCTURES NO. 3, as indicated on the Plans and as specified herein.

CROSSHOLE SONIC LOGGING

Description. This item shall consist of furnishing and installing test equipment access tubes in drilled shafts on the project, conducting Crosshole Sonic Logging (CSL) testing on drilled shafts to verify concrete quality, providing a report containing the test results and analysis, and subsequent grouting of the access tubes. The Engineer will determine which drilled shafts will have CSL testing and may expand the number of drilled shafts tested, beyond the number indicated in the summary of quantities.

The CSL test shall follow ASTM 6760 and measure the strength and time for an ultrasonic pulse to travel from a signal source in one access tube to a receiver in another access tube. In uniform, good quality concrete, the travel time between equidistant tubes should yield relatively consistent arrival times and corresponds to a reasonable pulse velocity, signal amplitude and energy from the bottom to the top of the shaft. Longer travel times, decrease in pulse velocity, and lower amplitude/energy signals indicate the presence of irregularities such as poor quality concrete, voids, honeycombing, cracking and soil intrusions.

Prequalification Requirements The CSL testing consultant shall have a minimum of two years of acceptable experience in CSL drilled shaft testing. No later than thirty (30) days prior to beginning drilled shaft construction, the Contractor shall submit to the Engineer for approval the following information:

(a) Name, address, and phone number of the CSL testing consultant selected to perform the testing.

(b) Names and experience of field staff conducting testing and engineer responsible for analyzing the results.

(c) List of at least two (2) projects on which this consultant has successfully completed CSL testing. The list shall include a brief description of the project, the client or owner name and phone number, and number of shafts tested.

Submittals. No later than thirty (30) days prior to beginning drilled shaft construction, the Contractor shall submit to the Engineer for approval the following information:

(a) Description of testing equipment and testing sequence on a typical shaft. Any modification or deviation to the testing procedures required by this special provision shall be so indicated.

(b) The CSL tube size, materials compliance, end and top cap details, couplings, any coupling joints details, and the proposed method of attaching the tubes to the cage.

(c) An example CSL report showing both sound and defective concrete.

Materials. The materials required for this item shall consist of the following:

(a) The test equipment access tubes shall be either 1.5 inch (38 mm) or 2 inch (50 mm) inside diameter Schedule 80 or 40 steel pipe conforming to ASTM A53, Grade A or B, Type E, F, or S.

(b) The grout used to fill the access tubes shall be a non-shrink 5000 psi (34.4 MPa) compressive strength grout according to Section 1024.

Equipment. The minimum requirements of the CSL testing equipment are as follows unless otherwise approved as part of the Contractor's submittal:

(a) A microprocessor based CSL system for display of individual CSL records, analog-digital conversion and recording of CSL data, analysis of receiver responses and printing of report quality CSL logs

(b) Ultrasonic source and receiver probes must be small enough to travel through 1.5 inch (38 mm) or 2 inch (50 mm) I.D. steel pipe access tubes and extend the full depth of the tube.

(c) The probes shall be capable of producing records at a minimum frequency of 40,000Hz with good signal amplitude and energy in typical concrete.

(d) An ultrasonic voltage pulser to excite the source with a synchronized triggering system to start the recording system.

(e) A depth measurement device to electronically measure and record the source and receiver depths associated with each CSL signal.

(f) Appropriate filter/amplification and cable systems for CSL testing.

(g) An acquisition system that stores each log in digital format, with drilled shaft identification, date, time and test details, including the source and receiver gain. Arrival time data must be displayed graphically during data acquisition.

(h) 3D tomographic imaging software, or source for completing the work

The equipment must be capable of providing the test results on thermal or graphical printouts with the vertical scale representing the vertical position along the shaft, and the horizontal scale representing the propagation time.

CONSTRUCTION REQUIREMENTS

Access tubes:
The Contractor shall place access tubes in all drilled shafts on the project unless otherwise indicated on the Plans or approved by the Engineer. The CSL Consultant must contact the drilled shaft Contractor and provide the technical instruction and guidance on obtaining and installing the access tubes so they will provide adequate bond to the concrete and yield the necessary data. The tubes must have a round, regular internal diameter, free of defects or obstructions to permit the free passage of the source and receiver probes. Four access tubes shall be installed in all drilled shafts with a diameter of 4.5 feet or less, five access tubes are required in shafts between 5 feet and 6 feet in diameter, six access tubes shall be used in 6.5 feet and 7.0 feet diameter shafts while eight tubes are required on larger shafts. Install the tubes in each drilled shaft in a regular, symmetric pattern such that each tube is equally spaced from the others around the perimeter of the cage. Tube placement must be such that large vertical reinforcing bars do not block the direct line between adjacent tubes. Securely attach the tubes to the interior of the reinforcement cage at vertical intervals not to exceed 3 feet (1 m) or otherwise secured such that the tubes remain in position during placement of the rebar cage and the concrete. The tubes must be vertical and parallel. Extend the tubes from 6 inches (150 mm) above the shaft tip to at least 3 feet (1 m) above the top of the shaft. If the shaft top elevation is below ground elevation, extend tubes at least 2 feet (610 mm) above ground surface. If the drilled shaft tip elevation is extended more than 1 foot (305 mm) below the tip elevation shown in the Plans, extend the tubes using proper threaded mechanical couplings to within 6 inches (150 mm) of the final tip elevation. Any joints used to construct the full tube length must be threaded mechanical couplings that produce a smooth interior surface, occur at the same elevation in each tube within the shaft and be watertight. Threaded water tight end caps shall be used at the bottom of each tube and a removable threaded end cap shall be provided on the top of the tubes. Do not use duct tape, other wrapping materials, or butt welding to seal joints. Under no circumstance will the tubes be allowed to rest on the bottom of the shaft excavation. Take care to not damage the tubes during the placement of reinforcing cage and the concrete. Before placement of the reinforcement cage into the shaft excavation, record the tube lengths and tube positions along the length of the cage. After placement of concrete, measure the stickup of the tubes above the top of the drilled shaft and verify tube spacing. After placement of the reinforcement cage and within 2 hours after concrete placement, fill the CSL tubes with clean, potable water, and cap them to keep out debris. The Engineer will reject tubes not filled and capped within 2 hours.

CSL Testing Procedure:
The testing shall be conducted between 3 and 40 days after the drilled shaft has been placed and after concrete has attained 2/3 of the specified strength. The Contractor shall provide suitable access to the top of the shafts and any electricity, grout, water or other equipment support necessary to satisfy the CSL testing requirements. When removing the access tube caps, exercise care not to apply excess torque, force or stress, which could break the bond between the tubes and the concrete. The Contractor shall provide the CSL consultant with the as-constructed tube positions in each shaft including each tube length, top of tube elevation, top of shaft elevation, bottom of shaft elevation, and construction dates prior to beginning CSL testing.

Conduct CSL tests between each unique pairing of access tubes (i.e. 4 tubes have 6 different combinations, 5 have 10 combinations, 6 have 15, etc.). Perform the CSL testing with the source and receiver probes in the same horizontal plane unless test results indicate defects or poor concrete zones, in which case the defect zones must be further evaluated with angle tests (source and receiver vertically offset in the tubes). Report any defects indicated by decreased signal velocity and lower amplitude/energy signals to the Engineer at the time of testing, and conduct angle tests in the zones of the defects as defined by the Concrete Condition Rating Criteria (CCRC). Make CSL measurements at depth intervals of 3 inches (75 mm) or less from the bottom of the tubes to the top of each shaft. Pull the probes simultaneously, starting from the bottom of the tubes, using a depth-measuring device to electronically measure and record the depths associated with each CSL signal. The speed of ascent shall be less than 12 inches per second (300 mm/second). Remove any slack from the cables before pulling to provide for accurate depth measurements of the CSL records. In the event defects are detected, conduct additional logs, as needed, to fully identify the extent of the anomaly.

If steel tube debonding occurs, a 2 inch (50 mm) diameter hole shall be drilled to below the depth of debonding for each debonded tube in order to perform the CSL testing.

CSL Report:
The test results shall be submitted to the Engineer in the form of a report within 7 working days of completion of CSL testing. The CSL report should include but is not limited to the following:

(a) Project identification

(b) Dates of testing

(c) Table and a plan view of each shaft tested with accurate identification of tube coordinates and tubes referenced to the site

(d) Tube collar elevation

(e) Names of personnel that performed the tests/interpretation and their affiliation
(f) Equipment used

(g) Data Logs, interpretation, analysis, and results.

(a)

The Data logs for each tube pair tested with analysis of the initial pulse arrival time, velocity, relative pulse energy/amplitude, and stacked waveform plotted versus depth. List all zones defined by the Concrete Condition Rating Criteria (CCRC) in a tabular format including the percent velocity reduction and the velocity values used from the nearby zone of good quality concrete. Discuss each zone defined by the CCRC in the CSL report as appropriate. Base the results on the percent reduction in velocity value from a nearby zone of good quality concrete with good signal amplitude and energy as correlated to the following:

(b) **Concrete Condition Rating Criteria (CCRC)**		
(c) CCRC (d) (Rating Symbol)	(e) **Velocity Reduction**	(f) **Indicative Results**
(g) Good (G)	(h) ≤ 10 %	(i) Good quality concrete
(j) Questionable (Q)	(k) 10 % to < 20 %	(l) Minor concrete contamination or intrusion. Questionable quality concrete.
(m) Poor/Defect (P/D)	(n) ≥ 20 %	(o) Defects exist, possible water/slurry contamination, soil intrusion, and/or poor quality concrete.
(p) Water (W)	(q) V = 4750 fps (r) (1450 mps) (s) to 5000 fps (t) (1525 mps)	(u) Water intrusion or water filled gravel intrusion with few or no fines present.
(v) No Signal (NS)	(w) No Signal Received	(x) Soil intrusion or other severe defect absorbed the signal (assumes good bond of the tube-concrete interface).

Do not grout the CSL tubes or perform any further work on the CSL tested drilled shaft until the Engineer determines whether the drilled shaft is acceptable. Perform tomography in order to further investigate and delineate the boundaries of any defective/unconsolidated zones with 20% or more reduction in velocity value as correlated to the CCRC. Process CSL data to construct easy to understand 2D/3D (2D cross-sections between tubes and 3D volumetric images for the entire shaft) color-coded tomographic images indicating velocity variations along the shaft. Location and geometry of defective/unconsolidated zones must be identified in 3D color images with detailed discussion in the CSL report.

Correction of drilled shaft defect:
When the field testing results or report determine that a defect is present, the Engineer will direct the Contractor to submit remedial measures for approval. No compensation will be made for remedial work or losses or damage due to remedial work of drilled shafts found defective or not in accordance with the drilled shaft special provision or the Plans. Modifications to the drilled shaft design or any load transfer mechanisms required by the remedial action must be designed, plans submitted sealed by an Illinois Licensed Structural Engineer, along with the design computations.

Access tube grouting:
After CSL test results have been reviewed and the Engineer has accepted the drilled shaft or approves grouting of the tubes, the tubes and any core holes shall be dewatered filled with a nonshrink grout according to Section 1024. Shafts with are not initially selected for CSL testing shall not be grouted until the results of the tested CSL test shafts have been reviewed and accepted.

Method of Measurement: This work will be measured per each shaft CSL tested. Access tubes installed and not utilized by the CSL testing equipment will not be included in the measurement of this item.

Basis of Payment. This work will be paid at the contract unit price per EACH for CROSSHOLE SONIC LOGGING. This payment will constitute full compensation for furnishing, installing, all access tubes, coring for debonded or clogged access tubes, equipment procurement, installation, testing, analysis, report, supplemental testing of grouting of access tubes, and drilled shaft repairs necessary.

METALLIZING STRUCTURAL STEEL

Description: This work shall consist of surface preparation, application of a thermal sprayed metal coating (metallizing) and all other work described herein. All work shall be done at the steel fabrication shop unless otherwise noted.

Contractor Prequalification. The Metallizing Contractor shall have satisfactorily performed three (3) previous projects involving the preparation of steel surfaces or other large structural members for metallizing, and then thermally spraying various metals or alloys onto them. The Metallizing Contractor shall have performed at least one similar project within the past two (2) years, and provide documentation of successful completion of projects that incorporated the use of thermal spraying. Prior to the pre-construction meeting or the beginning of any work on this project, The Contractor shall provide to the Department a list of previous clients, including the names, addresses and telephone numbers of successfully completed projects done by the Contractor or Subcontractor. Suitability of the Metallizing Contractor's qualifications and prior experience will be considered by the Department before granting approval to proceed.

Surface Preparation: The surface preparation shall be accomplished in accordance with the requirements of Steel Structures Painting Council (SSPC) Surface Preparation Specifications SP1 for Solvent Cleaning and SP10 for Near White Blast Cleaning. Unless otherwise specified, the surface preparation shall result in 2 to 4 mil (50 to 100 microns) blast profile as determined by the Engineer.

Abrasive shall be hard and sharp in order to produce an angular surface profile. Acceptable abrasives include but are not limited to, angular aluminum oxide, angular steel grit and angular crushed slag. Silica sand shall not be used. Steel shot and other abrasives producing a rounded surface profile are not acceptable. However, the steel can be preblasted with shot provided that the entire surface is reblasted with angular abrasive. A sample of the abrasive shall be submitted to the Engineer two weeks prior to surface preparation for testing and approval.

Prior to surface preparation, the Contractor shall prepare a test section on a representative section of the structural steel. The test section shall be prepared using the same equipment, materials and procedures as the production preparation. The Contractor shall prepare the test section surface to the specified level in accordance with the SSPC visual standards supplied by the Engineer. Only after a test section area has been approved shall the Contractor proceed with surface preparation operations. The test section shall be 10 square feet (1 sq. m).

The average surface profile produced by the Contractor's surface preparation procedures will be determined at the beginning of the work and as required by the Engineer using a profile depth tape and micrometer. Profile depth tape measurements shall be retained and included with QA documents. Single measurements less than 2 mil (50 microns), or greater than the specified maximum for the metallizing system used will be considered unacceptable. Areas having unacceptable measurements will be further tested to determine the limits of the deficient area. If unacceptable profiles are provided, work will be suspended. The Contractor shall submit a plan for the necessary adjustments to insure the correct surface profile on all surfaces. The Contractor shall not resume work until notified in writing by the Engineer.

The visual standards shall be used in addition to the plans and specifications to determine the degree of conformance with the appearance requirements and to determine acceptance of surface preparation. Additional compensation will not be allowed the Contractor for preparation of test sections.

Abrasive suppliers shall certify that abrasives are not oil contaminated and shall have a water extract pH value within the range of 6 to 8. All surfaces prepared with abrasives which are oil contaminated or have a pH outside the specified range shall be cleaned with solvent cleaner or low pressure water as directed by the Engineer and reblasted by the Contractor at his/her expense.

If the surface is degraded or contaminated subsequent to surface preparation and prior to metallizing, the surface shall be reblasted before metallizing. All surface cleaning shall be approved by the Engineer prior to metallizing.

Metallizing Structural Steel: This procedure governs the methods, requirements and procedures for applying thermal sprayed metal onto new steel surfaces. The process consists of melting metal and spraying it onto a prepared surface by means of compressed gas. All steel surfaces shall be metallized unless otherwise noted. High strength steel bolts, nuts, and washers shall be mechanically galvanized according to Article 1006.08(a) of the Standard Specifications. The top of the top flange shall be metallized as outlined in Article 506.09(j) of the Standard Specifications.

The thickness of the metallizing shall be 8 - 10 mils (200-250 microns) measured as specified by SSPC-PA2.

The wire used for metallizing shall be zinc or 85/15 zinc/aluminum per ASTM B-833, Standard Specification for Zinc Wire for Thermal Spraying (Metallizing). The metallizing material shall satisfy the requirements for Class B or better slip coefficient and creep resistance per Appendix A of the “Specification for Structural Joints Using High-Strength Bolts” by the Research Council on Structural Connections. The test results shall be provided to the Engineer by the Contractor prior to the start of work.

The requirements as outlined in the Joint Standard SSPC-CS 23.00/AWS C2.23M/NACE No. 12 “Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel” shall be followed and considered as part of this specification.

Before any metallizing is done, the Contractor shall prepare a test section for each batch or lot of wire supplied. The Contractor shall submit to the Engineer a steel plate approximately 12 inch x 12 inch (300 mm x 300 mm) to which the metal has been deposited to the specified thickness, as checked with a magnetic or Eddy Current Gage, for acceptance by the Engineer as to grain size and texture of the sprayed metal. The test plate will be used to determine the acceptance of the finished job.

The Engineer will perform the following test for adhesion on the metallized surface of the test plate. He/she will cut through the coating with a knife or chisel, if the metallizing or any part of it can be lifted from the base metal 1/4 inch (6 mm) or more ahead of the cutting blade without actually cutting the metal, the surface preparation will be deemed improper and the coating will be considered unsatisfactory. Each spray operator shall be qualified to metallize according to ANSI/AWS C2.18-93. Any operator who does not show evidence of qualification shall not be allowed to spray.

Two locations on each beam shall also be tested for adhesion as outlined above. All areas tested shall be repaired and remetallized according to this specification. In the event the Contractor’s coating is inferior to the sample, he shall be required to correct the coating by an acceptable repair method to produce a surface comparable to the approved test section.

The metallizing unit shall be a gun manufactured by an established domestic company. The gas or arc type is acceptable and recommended. The equipment shall be used according to manufacturer's recommendations. No surface shall be sprayed which shows any sign of rust, scale or moisture. All metallizing shall be applied within a maximum of four hours of the blasting. Spraying shall be done in a block pattern not to exceed 2 ft (600 mm) on a side with overlapping passes to ensure uniform coverage.

To produce the required thickness and uniformity, a minimum of two passes are required, overlapping and at right angles to each other. The gun shall be held at such a distance from the work surfaces that the metal is still plastic on impact 5 to 9 inches (125 mm - 230 mm). The coating shall be firmly adherent and free from uncoated spots, lumps or blisters, and have a fine sprayed texture.

The Contractor is required to provide facilities to protect the finished metallized surface from damage during the blasting and thermal spraying work operations on adjacent areas. All damaged coated areas shall be properly repaired and remetallized by the Contractor. Surfaces not intended to be metallized shall be suitably protected from the effects of cleaning and metallizing operations.

To the maximum extent practicable, metallizing shall be applied as a continuous film of uniform thickness free of pores. All thin spots or areas missed in the application shall be re-metallized.

The Engineer shall be notified a minimum of one week prior to starting surface preparation and/or metallizing. The Engineer will inspect completed sections of metallizing prior to acceptance. The coatings shall be checked for thickness by means of an approved thickness gauge. The Contractor shall be required to add metallizing to any areas failing to register minimum thickness before any oxidation of the surface occurs.

Weather Conditions: The surfaces to be metallized after surface preparation must remain free of moisture and other contaminants. The Contractor shall control his/her operations to insure that dust, dirt or moisture do not come in contact with surfaces prepared that day. In addition to the metallizing system's manufacturer's written instructions for surface preparation, and metallizing, the following conditions shall apply. (When in conflict, the most restrictive conditions shall govern).

(1) The minimum steel and air temperatures shall be 40° F (4° C). Metallizing shall not be applied to steel which is at a temperature that will cause blistering, porosity or otherwise detrimental to the life of the metallizing. Metallizing shall not be applied in rain, wind, snow, fog or mist, or when the steel surface temperature is less than 5° F (3° C) above the dew point. Metallizing shall not be applied to wet, damp or frosted surfaces. Metallizing shall not be applied when the relative humidity is above 85%.

(2) Metallizing will not be permitted when wind velocities are greater than 15 MPH (24 kph).

These conditions will be verified by the Engineer at locations representative of the surfaces to be cleaned, and metallized. Work accomplished under unfavorable weather conditions will be considered unacceptable and complete recleaning and metallizing of these areas will be required at the Contractor's expense.

Equipment: All cleaning equipment shall include gauges capable of accurately measuring fluid and air pressures and shall have valves capable of regulating the flow of air and or water as recommended by the equipment manufacturer. The equipment shall be maintained in proper working order.

Metallizing and surface preparation equipment shall utilize filters, traps or separators recommended by the manufacturer of the equipment and shall be kept clean to prevent oil, water, dried paint and other foreign materials from being deposited on the surface. The filters, traps and separators shall be cleaned or drained by means, and at intervals, recommended by the manufacturer of the equipment.

Pressure type abrasive air blasting equipment shall be capable of supplying a minimum of 100 psi (690 kPa) pressure and 250 CFM (120 L/S) capacity with all air blast nozzles being used. If blast nozzle orifice sizes larger than 3/8 inch (9.5 mm) are being used, the minimum capacity of the equipment shall be increased in accordance with the recommendations of SSPC Good Painting Practice, Volume 1, Chapter 2.4, Table 1. The pressure will be measured at the blast nozzle. The equipment shall be capable of providing the minimum required pressure and volume, free of oil, water and other contaminants.

Diesel or gasoline powered equipment shall be positioned or vented in a manner to prevent deposition of combustion contaminants on any part of the structure.

Prior to beginning all metallizing operations, air equipment shall pass the requirements of ASTM D 4285. This test will be repeated as determined by the Engineer.

Quality Control: The Contractor shall conduct a quality control program which ensures that the work accomplished complies with these specifications. The quality control program shall consist of:

1. Qualified personnel to manage the program and conduct quality control tests.
2. Proper quality measuring instruments.
3. Quality Control Plan.
4. Condition and quality recording procedures.

The personnel managing the quality control program shall have considerable experience and knowledge of metallizing and industrial coatings and the measurements needed to assure quality work. The personnel performing the quality control tests shall be trained in the use of the quality control instruments. These personnel shall not perform metallizing and surface preparation.

The Contractor shall supply all necessary equipment to perform quality control testing of weather conditions, equipment, surface preparation and profile, metallizing thickness. These instruments shall be calibrated by the Contractor's personnel in accordance with the equipment manufacturer's recommendations.

The Contractor shall implement a Quality Control Plan approved by the Engineer including; a schedule of required measurements and tests as outlined herein, procedures for correcting unacceptable work and procedures for improving surface preparation, and metallizing quality as a result of quality control findings. The Contractor shall use forms supplied by the Engineer to record the results of quality control tests. These reports shall be available at the work site for review by the Engineer.

The purpose of the quality control program is to assist the Contractor in the proper performance of the work. Quality control tests performed by the Contractor will not be used as the sole basis for acceptance of the work.

Painting Metallized Structural Steel: When Painting all or portions of the metallized structural steel is specified it shall be done as noted on the plans and according to Article 506.10.

Special Instructions:

Metallizing Date. At the completion of the work, the Contractor shall stencil in contrasting color paint the date of metallizing the bridge. The letters shall be capitals, not less than 2 inches (50 mm) and not more than 3 inches (75 mm) in height.

The stencil shall contain the word "METALLIZED" and shall show the month and year in which the coating was completed followed by “CODE” and the appropriate code number for the paint system applied. “W” is the code for Shop applied metalizing and field applied Epoxy/Polyurethane and “AC” for Shop applied metalizing and field applied Acrylic/Acrylic. This shall be stenciled on the outside face of an outside stringer near one end of the bridge, or at some equally visible surface near the end of the bridge, as designated by the Engineer. If multiple systems are being applied to the structure then multiple Stencils are appropriate.

Removal of all debris, rust and waste generated by this work from the job site is the Contractor's responsibility and included in the Lump Sum Price.

It is understood and agreed that the cost of all work outlined above, unless otherwise specified, has been included in the bid, and no extra compensation will be allowed.

Basis of Payment:

This work shall not be paid for separately but shall be included in the unit price bid for furnishing and/or erecting structural steel according to Article 505.13.

HOT DIP GALVANIZING FOR STRUCTURAL STEEL

Description. This work shall consist of surface preparation and hot dip galvanizing all structural steel specified on the plans and painting of galvanized structural steel when specified on the plans.

Materials. Fasteners shall be ASTM A 325 Type 1, High Strength bolts with matching nuts and washers.

Fabrication Requirements. To insure identification after galvanizing, piece marks shall be supplemented with metal tags for all items where fit-up requires matching specific pieces.

After fabrication (cutting, welding, drilling, etc.) is complete, all holes shall be deburred and all fins, scabs or other surface/edge anomalies shall be ground or repaired per AASHTO M 160. The items shall then be cleaned per Steel Structures Painting Council's Surface Preparation Specification SSPC-SP1 (Solvent Cleaning) and SSPC-SP6 (Commercial Blast Cleaning). All surfaces shall be inspected to verify no fins, scabs or other similar defects are present.

The Contractor shall consult with the galvanizer to insure proper removal of grease, paint and other deleterious materials prior to galvanizing.

Cleaning Structural Steel

If rust, mill scale, dirt, oil, grease or other foreign substances have accumulated prior to galvanizing, steel surfaces shall be cleaned by a combination of either:

-Caustic cleaning and cleaning according to SSPC-SP8 (Pickling) or
-Cleaning according to SSPC-SP1 (Solvent Cleaning) and SSPC-SP6 (Commercial Blast Cleaning).

Special attention shall be given to the cleaning of corners and reentrant angles.

Surface Preparation and Hot Dip Galvanizing

General. Surfaces of the structural steel specified on the plans shall be prepared and hot dip galvanized as described herein.

Surface Preparation. A flux shall be applied to all steel surfaces to be galvanized. Any surfaces which will receive field-installed stud shear connectors shall not be galvanized within 2 in. (50 mm) of the stud location. Either the entire area receiving studs or just individual stud locations may be left ungalvanized. The following steel surfaces of bearings shall not be galvanized: stainless steel surfaces, surfaces which will be machined (except for fixed bearing sole plates), and surfaces which will have TFE, elastomer, or stainless steel parts bonded to them.

The cleaned surfaces shall be galvanized within 24 hours after cleaning, unless otherwise authorized by the Engineer.

Application of Hot Dip Galvanized Coating. Steel members, fabrications and assemblies shall be galvanized by the hot dip process in the shop according to AASHTO M 111.

Bolts, nuts, washers and steel components shall be galvanized in the shop according to ASTM F 2329.

All steel shall be safeguarded against embrittlement according to ASTM A 143. Water quenching or chromate conversion coating shall not be used on any steel work that is to be painted. All galvanized steel work shall be handled in such a manner as to avoid any mechanical damage and to minimize distortion.

Beams and girders shall be handled, stored and transported with their webs vertical and with proper cushioning to prevent damage to the member and coating. Members shall be supported during galvanizing to prevent permanent distortion.

Hot Dip Galvanized Coating Requirements. Coating weight, surface finish, appearance and adhesion shall conform to requirements of ASTM A 385, ASTM F2329, AASHTO M 111 or AASHTO M 232, as appropriate.

Any high spots of zinc coating, such as metal drip lines and rough edges, left by the galvanizing operation in areas that are to be field connected or in areas that are to be painted shall be removed by cleaning per SSPC-SP2 (Hand Tool Cleaning) or SSPC-SP3 (Power Tool Cleaning). The zinc shall be removed until it is level with the surrounding area, leaving at least the minimum required zinc thickness.

Shop assemblies producing field splices shall provide 1/8 in. (3 mm) minimum gaps between ends of members to be galvanized. At field splices of beams or girders, galvanizing exceeding 0.08 in. (2 mm) on the cross-sectional (end) face shall be partially removed until it is 0.04 in. to 0.08 in. (1 to 2 mm) thick.

Testing of Hot Dip Galvanized Coating. Inspection and testing of hot dip galvanized coatings shall follow the guidelines provided in the American Galvanizers Association publication "*Inspection of Products Hot Dip Galvanized After Fabrication".* Sampling, inspection, rejection and retesting for conformance with requirements shall be according to AASHTO M 111 or AASHTO M 232, as applicable. Coating thickness shall be measured according to AASHTO M 111, for magnetic thickness gage measurement or AASHTO M 232, as applicable.

All steel shall be visually inspected for finish and appearance.

Bolts, nuts, washers, and steel components shall be packaged according to ASTM F 2329. Identity of bolts, nuts and washers shall be maintained for lot-testing after galvanizing according to Article 505.04(f)(2) for high strength steel bolts.

A notarized certificate of compliance with the requirements listed herein shall be furnished. The certificate shall include a detailed description of the material processed and a statement that the processes used met or exceeded the requirements for successful painting of the surface, where applicable. The certificate shall be signed by the galvanizer.

Repair of Hot Dip Galvanized Coating. Surfaces with inadequate zinc thickness shall be repaired in the shop according to ASTM A 780 and AASHTO M 111.

Surfaces of galvanized steel that are damaged after the galvanizing operation shall be repaired according to ASTM A 780 whenever damage exceeds 3/16 in. (5 mm) in width and/or 4 in. (100 mm) in length. Damage that occurs in the shop shall be repaired in the shop. Damage that occurs during transport or in the field shall be repaired in the field.

After galvanizing, contact surfaces for any bolted connections shall be roughened by hand wire brushing or according to SSPC-SP7 (Brush-Off Blast Cleaning). Power wire brushing is not allowed.

All bolt holes shall be reamed or drilled to their specified diameters after galvanizing. All bolts shall be installed after galvanizing.

Surface Preparation and Painting

Surface Preparation. When galvanized steel surfaces are specified to be painted they shall be clean and free of oil, grease, and other foreign substances. Surface preparation necessary to provide adequate adhesion of the coating shall be performed according to ASTM D6386. Surface preparation shall include, but not be limited to the following:

- All galvanized steel surfaces that are to be painted shall be cleaned according to SSPC-SP1 (Solvent Cleaning). After cleaning, all chemicals shall be thoroughly rinsed from the surface with a suitable solvent. The steel shall be allowed to completely dry prior to coating application.

- All galvanized steel surfaces that are to be painted shall be checked for the presence of chromate conversion coating according to ASTM D 6386 Appendix X1. Surfaces where chromate conversion coating is found shall be cleaned according to the same appendix and blown down with clean, compressed air according to ASTM D 6386 Section 6.1.

- All galvanized steel surfaces that are to be painted shall be checked for the presence of wet storage stain. Surfaces where wet storage stain is found shall be cleaned, rinsed and completely dried according to ASTM D 6386 Section 6.2.

- Following galvanizing, thickness readings shall verify the acceptable thickness of the galvanizing according to AASHTO M111/ASTM A123.

Paint Requirements. The paint materials (epoxy intermediate coat and aliphatic urethane finish coat) shall meet the requirements of the Articles 1008.05(d) and (e) of the Standard Specification.

All paint materials for the shop and field shall be supplied by the same manufacturer, and samples of components submitted for approval by the Department, before use.

Paint storage, mixing, and application shall be according to Section 506 of the Standard Specifications and the paint manufacturer's written instructions and product data sheets. In the event of a conflict the Contractor shall advise the Engineer and comply with the Engineer's written resolution. Until a resolution is provided, the most restrictive conditions shall apply.

Shop Application of the Paint System. The areas to be painted shall receive one full coat of an epoxy intermediate coat and one full coat of an aliphatic urethane finish coat. The film thickness of each coat shall be according to Article 506.09(f)(2).

Construction Requirements. The contact surfaces of splice flange connections (mating flange faces and areas under splice bolt heads and nuts) shall be free of paint prior to assembly. If white rust is visible on the mating flange surfaces, the steel shall be prepared by hand wire brushing or brush-off blasting according to SSPC-SP7. Power wire brushing is not allowed.

After field erection, the following areas shall be prepared by cleaning according to SSPC-SP1 (Solvent Cleaning), tie- or wash-coated if applicable, and then painted or touched up with the paint specified for shop application (the intermediate coat and/or the finish coat):

- exposed unpainted areas at bolted connections
- areas where the shop paint has been damaged
- any other unpainted, exposed areas as directed by the Engineer.

Special Instructions. Painting Date/System Code. At the completion of the work, the Contractor shall stencil in contrasting color paint the date of painting the bridge and the paint type code from the Structure Information and Procedure Manual for the system used according to Article 506.10(i). The code designation for galvanizing is "V". If painting of the structural steel is not specified then the word "PAINTED" may be omitted, the month and year shall then correspond to the date the stencil is applied.

Basis of Payment. The cost of all surface preparation, galvanizing, painting and all other work described herein shall be considered as included in the unit price bid for the applicable pay items to be galvanized and painted, according to the Standard Specifications.

ERECTION OF COMPLEX STEEL STRUCTURES
Effective: April 11, 2007

Description: In addition to the requirements of Article 505.08(e), the following shall apply.

The Contractor or sub-Contractor performing the erection of the structural steel is herein referred to as the Erection Contractor.

Erector Qualifications: The Erection Contractor shall be certified as an Advanced Certified Steel Erector (ACSE), by the AISC Certification Program. The Erection Contractor shall submit evidence of current ACSE certification to the Engineer with the submittal of the proposed erection plan.

Erection Plan: The Erection Contractor shall retain the services of an engineering firm, pre-qualified with the Illinois Department of Transportation in the Complex Structures category, for the completion of a project-specific erection plan. An Illinois Licensed Structural Engineer employed by this pre-qualified engineering firm, herein referred to as the Erection Engineer, shall sign and seal the erection plan, drawings, and calculations for the proposed erection of the structural steel.

The erection plan shall be complete in detail for all phases, stages, and conditions anticipated during erection. The erection plan shall include structural calculations and supporting documentation necessary to completely describe and document the means, methods, temporary support positions, and loads necessary to safely erect the structural steel in conformance with the contract documents and as outlined herein. The erection plans shall address and account for all items pertinent to the steel erection including such items as sequencing, falsework, temporary shoring and/or bracing, girder stability, crane positioning and movement, means of access, pick points, girder shape, permissible deformations and roll, interim/final plumbness, cross frame/diaphragm placement and connections, bolting and anchor bolt installation sequences and procedures, and blocking and anchoring of bearings. The Erection Contractor shall be responsible for the stability of the partially erected steel structure during all phases of the steel erection.

The erection plans and procedures shall be submitted to the Engineer for review and acceptance prior to starting the work. Review, acceptance and/or comments by the Department shall not be construed to guarantee the safety or final acceptability of the work or compliance with all applicable specifications, codes, or contract requirements, and shall neither relieve the Contractor of the responsibility and liability to comply with these requirements, nor create liability for the Department. Significant changes to the erection plan in the field must be approved by the Erection Engineer and accepted by the Engineer for the Department.

Basis of Payment: This work shall not be paid for separately but shall be included in the applicable pay items according to Art. 505.13 of the Standard Specifications.

LIGHTWEIGHT CELLULAR CONCRETE FILL (DISTRICT ONE)
Effective: November 11, 2001
Revised: February 28, 2013

Description. This work consists of providing lightweight cellular concrete fill at the required location(s) according to the details and dimensions shown in the plans, and as directed by the Engineer.

Materials. The materials shall meet the following requirements:

Cement. Type I or Type III Portland cement shall comply with Section 1001 of the Standard Specifications. Pozzolans and finely divided minerals will not be permitted.

Water. Water shall be potable and shall meet the requirements of Section 1002 of the Standard Specifications.

Foaming Agent. Available products will be shown on the Department's "Approved List of Foaming Agents for Cellular Concrete".

Other Concrete Admixtures. Concrete admixtures may be used only when approved by the Engineer. The concrete admixtures shall meet the requirements of Articles 1021.01 - 1021.04 of the Standard Specifications.

Cellular Concrete. The cellular concrete shall have the following properties:

	Class II	Class IV
Cast Density ASTM C138	24-30 pcf (384-480 kg/m^3)	36-42 pcf (577-673 kg/m^3)
Minimum Compressive Strength ASTM C495-Modified		
@7 days	30 psi (207 kpa)	90 psi (620 kpa)
@28 days	40 psi (276 kpa)	120 psi (827 kpa)
Freeze-thaw Resistance (min cycles @ relative Pc=70%) per ASTM C666-Modified	N/A	300 cycles
Coefficient Permeability (cm/sec) per ASTM D2434		
@17 kpa (2.5 psi)	1.3×10^{-3}	4.4×10^{-6}
@124 kpa (18 psi)	1.2×10^{-4}	3.1×10^{-7}
Water Absorption Long term immersion As % of cast density (120) days per ASTM C796-Modified	20% max.	14% max.

Within 15 calendar days after execution of the contract the Contractor shall submit the following:

Manufacturer's specifications, catalog cuts, engineering test reports furnished by test laboratories and written approval of the subcontractor & equipment, by the manufacturer of the cellular concrete.

The temperature of the cellular concrete mixture at the point of discharge shall not be below 45 °F (7.2 °C) nor greater than 95 °F (35 °C).

Equipment. Only automated proportioning mixing and placing equipment approved by the manufacturer of the cellular concrete shall be used. Bulk cement shall be weighed on a scale which shall operate within a tolerance of 1 1/2 percent of the weight of the cement per batch. The plant shall be equipped with an automatic batch counter and automatic timer to account for the foam in the mixer.

The scales shall be calibrated by an independent company. The independent company shall have scale testing equipment and standard weights meeting the requirements of NIST. The scale calibration will be observed by the Engineer. Scales shall be calibrated at the beginning of each construction season or each 12 month period, and each time the scales are moved, or when scale components are repaired or replaced.

Construction Requirements

Prior to installation. The ground surface shall be cleared of debris, sharp objects and trees. Tree stumps shall be either removed or cut to the level of the ground surface. All wheel tracks or ruts in excess of 3 inches (76 mm) in depth shall be graded smooth or otherwise filled with soil to provide a reasonable smooth surface.

If required in the plans, a geotechnical fabric for ground stabilization shall be placed according to Section 210 of the Standard Specifications.

If a geomembrane liner is required in the plans, this work shall be done according to the special provision for “Geomembrane Impermeable Liner.”

If any items are to be enclosed in the fill, the items shall be set to the final location both horizontally and vertically prior to installation of the cellular concrete.

There shall be no standing water in the area to be filled. If necessary, dewatering shall be continuous during the time the cellular concrete is constructed.

The air temperature shall not be less than 35 °F (1.7 °C) at the time of placement.

Cellular concrete shall not be placed during periods of precipitation unless placed in an enclosed, covered area.

Installation. The cellular concrete shall be placed in accordance with the installation procedures provided by the manufacturer of the cellular concrete. After mixing, it shall be promptly placed in the final location, and in a manner to prevent segregation. Each lift of the Class II Cellular Concrete shall be placed to a maximum depth of 4 ft (1.2 m) and Class IV Cellular Concrete shall be placed to a maximum depth of 2 ft (0.6 m). Intermediate lifts may be placed horizontal. Only the top lift shall be sloped to grade.

The cellular concrete shall be placed using a hose. It will not be allowed to flow more than 10 feet from where it is deposited to its final position.

The final surface elevation of the cellular concrete shall be within 0.1 $\pm$ ft (30 $\pm$ mm) of the plan elevation.

The final surface of the cellular concrete shall be covered with a bituminous prime coat meeting the requirements of Article 1032 of the Standard Specifications at a rate of 0.05 to 0.10 gal/sq yd (0.2 to 0.5 L/sq m). The prime coat will not be paid for separately but shall be included in the contract unit price for the cellular concrete. The Engineer may waive the requirement for the prime coat based on design and project requirements.

Testing. During placement of the initial batches, the density shall be checked and adjustments made to obtain the specified cast density at the point of placement. Density of the mix shall only be adjusted by increasing or decreasing the foam.

Eight strength test specimens will be required for the first four testing locations and a minimum of four strength test specimens thereafter. Specimens shall by obtained for each 300 cu yd (230 cu m) of engineered fill placed or for each four hours of placement. The contractor shall supply EPS (expanded polystyrene) four cell molds with EPS tops for 3 in. x 6 in. (75 mm x 150 mm) test specimens. The cylinders will be protected from vandalism or environmental extremes by the use of a cure box in the field. This box will be provided by the contractor.

The specimens shall be tested by the Department in accordance with ASTM C495, except that they shall be removed from the EPS molds and air dried at a temperature of 70 ± 10 °F (21.1 ± 5.5 °C) and a relative humidity of 50 ± 30% for three days prior to strength testing.

Additional specimens shall be tested to monitor the compressive strength. The last 2 specimens from each series should be tested at 28 days. The manufacturer may require special handling and testing techniques of the engineered fill.

Density tests shall be completed at a minimum rate of one per hour of placement. Additional tests shall be done if adjustments are made to the materials. These tests shall be documented.

Loading. Construction activities may be resumed on the material upon approval by the Engineer when a penetration rate of 1.5 in/blow (38 mm/blow) or less has been obtained with the Dynamic Cone Penetration (DCP) test as described in the Manual of Test Procedures/Geotech Manual.

Method of Measurement.
Contract Quantity. When the project is constructed essentially to the lines, grades or dimensions shown on the plans and the Contractor and the Engineer have agreed in writing the plan quantities are accurate, no further measurement will be required. Payment will be made for the quantities shown in the contract for the various items involved except that if errors are discovered after work has been started, appropriate adjustments will be made.

When the plans have been altered or when disagreement exists between the Contractor and the Engineer as to the accuracy of the plan quantities, either party shall, before any work is started which would affect the measurement, have the right to request in writing and thereby cause the quantities involved to be measured as hereinafter specified.

Measured Quantities. Lightweight Cellular Concrete Fill will be measured in its final position and the volume in cubic yards (cubic meters) computed by method of average end areas. The dimensions used in calculating the average end areas shall not exceed the neat lines shown in the plans unless ordered in writing by the Engineer.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) for LIGHTWEIGHT CELLULAR CONCRETE FILL.

MECHANICALLY STABILIZED EARTH RETAINING WALL, SPECIAL

Description. This work shall consist of preparing the design, furnishing the materials, and constructing the mechanically stabilized earth (MSE) retaining wall to the lines, grades and dimensions shown in the contract plans and as directed by the Engineer.

General. The MSE wall consists of a concrete leveling pad, precast concrete face panels, a soil reinforcing system, and concrete coping (when specified). The soil reinforcement shall have sufficient strength, quantity, and pullout resistance, beyond the failure surface within the lightweight fill, as required by design. The material, fabrication, and construction shall comply with this Special Provision and the requirements specified by the supplier of the wall system selected by the Contractor for use on the project.

The MSE retaining wall shall be one of the following pre-approved wall systems:

Company Name: Wall System
Earth Tec International, LLC: EarthTrac HA
Sanders Pre-Cast Concrete Systems Company: Sanders MSE Wall
Shaw Technologies: Strengthened Soil
Sine Wall, LLC: Sine Wall
SSL Construction Products: MSE Plus
Vist-A-Wall Systems, LLC: Vist-A-Wall
Tensar Earth Technologies : ARES Wall
The Reinforced Earth Company: GeoMega System
The Reinforced Earth Company: Reinforced Earth
The Reinforced Earth Company: Retained Earth
Tricon Precast: Tricon Retained Soil
Tricon Precast: Tri-Web Retained Soil

Pre-approval of the wall system does not include material acceptance at the jobsite.

Submittals. The wall system supplier shall submit complete design calculations and shop drawings to the Engineer according to Article 1042.03(b) of the Standard Specifications no later than 90 days prior to beginning construction of the wall. No work or ordering of materials for the structure shall be done by the Contractor until the submittal has been approved in writing by the Engineer. All submittals shall be sealed by an Illinois Licensed Structural Engineer and shall include all details, dimensions, quantities and cross sections necessary to construct the wall and shall include, but not be limited to, the following items:

(a) Plan, elevation and cross section sheet(s) for each wall showing the following:

(1) A plan view of the wall indicating the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. The plan view shall show the limits of soil reinforcement and stations where changes in length and/or size of reinforcement occur. The centerline shall be shown for all drainage structures or pipes behind or passing through and/or under the wall.

(2) An elevation view of the wall indicating the elevations of the top of the panels. These elevations shall be at or above the top of exposed panel line shown on the contract plans. This view shall show the elevations of the top of the leveling pads, all steps in the leveling pads and the finished grade line. Each panel type, the number, size and length of soil reinforcement connected to the panel shall be designated. The equivalent uniform applied service (unfactored) nominal bearing pressure shall be shown for each designed wall section.

(3) Elevation views of entire wall indicating layout of all panel types and architectural treatment and formliner.

(4) A listing of the summary of quantities shall be provided on the elevation sheet of each wall.

(5) Typical cross section(s) showing the limits of the reinforced fill volume included within the wall system, soil reinforcement, embankment material placed behind the fill, precast face panels, and their relationship to the right-of-way limits, excavation cut slopes, existing ground conditions and the finished grade line.

(6) All general notes required for constructing the wall.

(b) All details for the concrete leveling pads, including the steps, shall be shown. The top of the leveling pad shall be located at or below the theoretical top of the leveling pad line shown on the contract plans. The theoretical top of leveling pad line shall be 3.5 ft. (1.1 m) below finished grade line at the front face of the wall, unless otherwise shown on the plans.

(c) Where concrete coping or barrier is specified, the panels shall extend up into the coping or barrier as shown in the plans. The top of the panels may be level or sloped to satisfy the top of exposed panel line shown on the contract plans. Cast-in-place concrete will not be an acceptable replacement for panel areas below the top of exposed panel line. As an alternative to cast in place coping, the Contractor may substitute a precast coping, the details of which must be included in the shop drawings and approved by the Engineer.

(d) All panel types shall be detailed. The details shall show all dimensions necessary to cast and construct each type of panel, architectural treatment, all reinforcing steel in the panel, and the location of soil reinforcement connection devices embedded in the panels. These panel embed devices shall not be in contact with the panel reinforcement steel.

(e) All details of the wall panels and soil reinforcement placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, coping, foundations, and utilities etc. shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular system shall also be submitted.

(f) When specified on the contract plans, all details of architectural panel treatment, including color, texture and form liners shall be shown.

(g) The details for the connection between concrete panels, embed devices, and soil reinforcement shall be shown.

(h) When pile sleeves are specified, the pile sleeve material, shape, and wall thickness shall be submitted to the Engineer for approval. It shall have adequate strength to withstand the fill pressures without collapse until after completion of the wall settlement. The annulus between the pile and the sleeve shall be as small as possible while still allowing it to be filled with loose dry sand after wall erection.

    a. Samples: 2'x2' sample for each formliner type indicated on drawings for approval of texture and finish. If the test samples are not approved, additional samples shall be furnished until a satisfactory texture and finish is obtained, at no additional cost to the Department.

(i) Mock up: Full size sample of panel types 1 and 2, including final appearance of texture and finish. The mock-up approved by the Engineer shall then be the standard of comparison for the remaining finishes.

The initial submittal shall include three sets of shop drawings and one set of calculations. One set of drawings will be returned to the Contractor with any corrections indicated. After approval, the Contractor shall furnish the Engineer with ten (10) sets of corrected plan prints for distribution by the Department. No work or ordering of materials for the structure shall be done until the submittal has been approved by the Engineer.

Materials. The MSE walls shall conform to the supplier's standards as previously approved by the Department, and the following:

(a) The soil reinforcing system, which includes the soil reinforcement, and all connection devices, shall be according to the following:

(1) Inextensible Soil Reinforcement. Steel reinforcement shall be according ASTM A 572 Grade 65 (450), ASTM A1064, ASTM A 1011 or ASTM A 463 Grade 50 (345). The steel strips shall be either epoxy coated, aluminized Type 2, or galvanized. Epoxy coatings shall be according to Article 1006.10(a)(2), except the minimum thickness of epoxy coating shall be 18 mils (457 microns). No bend test will be required. Aluminized Type 2-100 shall be according to ASTM A 463. Galvanizing shall be according to AASHTO M 111 or ASTM A 653 with touch up of damage according to ASTM A 780.

(2) Extensible Soil Reinforcement. Geosynthetic reinforcement shall be monolithically fabricated from virgin high density polyethylene (HDPE) or high tenacity polyester (HTPET) resins having the following properties verified by mill certifications:

Property for Geosynthetic Reinforcement	Value	Test
Minimum Tensile Strength	**	ASTM D 6637

** as specified in the approved design calculations and shown on the shop drawings.

Property for HDPE	Value	Test
Melt Flow Rate (g/cm)	0.060 – 0.150	ASTM D 1238, Procedure B
Density (g/cu m)	0.941 – 0.965	ASTM D 792
Carbon Black	2% (min)	ASTM D 4218

Property for HTPET	Value	Test
Carboxyl End Group (max) (mmol/kg)	<30	GRI-GG7
Molecular Weight (Mn)	>25,000	GRI-GG8

(3) Panel Embed/Connection Devices. Panel embeds and connection devices shall be according to the following.

a. Metallic panel embed/connection devices and connection hardware shall be galvanized according to AASHTO M 232 and shall be according to the following.

Mesh and Loop Embeds	ASTM A1064 or ASTM A 706 Grade 60 (420)
Tie Strip Embeds	AASHTO M 270/M 270M Grade 50 (345) or ASTM A 1011 HSLAS Grade 50 (345) Class 2

b. Non metallic panel embed/connection devices typically used with geosynthetic soil reinforcement shall be manufactured from virgin or recycled polyvinyl chloride having the following properties:

Property for Polyvinyl Chloride	Value	Test
Heat Deflection Temperature (°F)	155 - 164	ASTM D 1896
Notched IZOD 1/8 inch @ 73°F (ft-lb/in)	4 – 12	ASTM D 256
Coefficient of Linear Exp. (in/in/°F)	3.5 – 4.5	ASTM D 696
Hardness, Shore D	79	ASTM D 2240

Property for Polypropylene	Value	Test
Melt Flow Rate (g/cm)	0.060 – 0.150	ASTM D 1238, Procedure B
Density (g/cu m)	0.88 – 0.92	ASTM D 792

(b) Lightweight fill, defined as the material placed in the reinforced volume behind the wall, shall be according to the Special Provision for LIGHTWEIGHT CELLULAR CONCRETE FILL.

(c) The geosynthetic filter material used across the panel joints shall be either a non-woven needle punch polyester or polypropylene or a woven monofilament polypropylene with a minimum width of 12 in. (300 mm) and a minimum non-sewn lap of 6 in. (150 mm) where necessary.

(d) The bearing pads shall be rubber, neoprene, polyvinyl chloride, or polyethylene of the type and grade as recommended by the wall supplier.

(e) All precast panels shall be manufactured with Class PC concrete according to Section 504, Article 1042.02, Article 1042.03, and the following requirements:

(1) The minimum panel thickness shall be 5 1/2 in. (140 mm).

(2) The minimum reinforcement bar cover shall be 1 1/2 in. (38 mm).

(3) The panels shall have a ship lap or tongue and groove system of overlapping joints between panels designed to conceal joints and bearing pads.

(4) The panel reinforcement shall be according to Article 1006.10(a)(2) or 1006.10(b)(1) except the welded wire fabric shall be epoxy coated according to ASTM A884.

(5) All dimensions shall be within 3/16 in. (5 mm).

(6) Angular distortion with regard to the height of the panel shall not exceed 0.2 inches in 5 ft (5 mm in 1.5 m).

(7) Surface defects on formed surfaces measured on a length of 5 ft. (1.5 m) shall not be more than 0.1 in. (2.5 mm).

(8) The panel embed/connection devices shall be cast into the facing panels with a tolerance not to exceed 1 in. (25 mm) from the locations specified on the approved shop drawings.

Unless specified otherwise, concrete surfaces exposed to view in the completed wall shall be finished according to Article 503.15(a). The back face of the panel shall be roughly screeded to eliminate open pockets of aggregate and surface distortions in excess of 1/4 in. (6 mm).

Design Criteria. The design shall be according to the AASHTO LRFD Design Specifications noted on the plans for Mechanically Stabilized Earth Walls except as modified herein. The wall supplier shall be responsible for all internal stability aspects of the wall design and shall supply the Department with computations for each designed wall section. The analyses of settlement, bearing capacity and overall slope stability will be the responsibility of the Department. The wall need not be designed for seismic unless noted on the plans.

External loads, such as those applied through structure foundations, from traffic or railroads, slope surcharge etc., shall be accounted for in the internal stability design. The presence of all appurtenances behind, in front of, mounted upon, or passing through the wall volume such as drainage structures, utilities, structure foundation elements or other items shall be accounted for in the internal stability design of the wall.

The design of the soil reinforcing system shall be according to the applicable design specifications for “Inextensible” steel or “Extensible” geosynthetic reinforcement criteria. The reduced section of the soil reinforcing system shall be sized to allowable stress levels at the end of a 75 year design life.

Steel soil reinforcing systems shall be protected by one of the following; epoxy coating, galvanizing or aluminizing. The design life for epoxy and aluminizing shall be assumed to be 16 years. The corrosion protection for the balance of the 75 year total design life shall be provided using a sacrificial steel thickness computed for all exposed surfaces.

Geosynthetic soil reinforcing systems shall be designed to account for the strength reduction due to long-term creep, chemical and biological degradation, as well as installation damage.

To prevent out of plane panel rotations, the soil reinforcement shall be connected to the standard panels in at least two different elevations, vertically spaced no more than 30 in. (760 mm) apart.

Typical design procedures and details, once accepted by the Department, shall be followed. All wall system changes shall be submitted in advance to the Department for approval.

For aesthetic considerations and differential settlement concerns, the panels shall be erected in such a pattern that the horizontal panel joint line is discontinuous at every other panel. This shall be accomplished by alternating standard height and half height panel placement along the leveling pad. Panels above the lowest level shall be standard size except as required to satisfy the top of exposed panel line shown on the contract plans.

At locations where the plans specify a change of panel alignment creating an included angle of 150 degrees or less, precast corner joint elements will be required. This element shall separate the adjacent panels by creating a vertical joint secured by means of separate soil reinforcement.

Isolation or slip joints, which are similar to corner joints in design and function, may be required to assist in differential settlements at locations indicated on the plans or as recommended by the wall supplier. Wall panels with areas greater than 30 sq. ft. (2.8 sq. m) may require additional slip joints to account for differential settlements. The maximum standard panel area shall not exceed 60 sq. ft. (5.6 sq. m).

Construction. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include any costs related to this technical assistance in the unit price bid for this item.

The foundation soils supporting the structure shall be graded for a width equal to or exceeding the length of the soil reinforcement. Prior to wall construction, the foundation shall be compacted with a smooth wheel vibratory roller. Any foundation soils found to be unsuitable shall be removed and replaced, as directed by the Engineer, and shall be paid for separately according to Section 202.

When structure excavation is necessary, it shall be made and paid for according to Section 502 except that the horizontal limits for structure excavation shall be from the rear limits of the soil reinforcement to a vertical plane 2 ft. (600 mm) from the finished face of the wall. The depth shall be from the top of the original ground surface to the top of the leveling pad. The additional excavation necessary to place the concrete leveling pad will not be measured for payment but shall be included in this work.

The concrete leveling pads shall have a minimum thickness of 6 in. (150 mm) and shall be placed according to Section 503.

As fill material is placed behind a panel, the panel shall be maintained in its proper inclined position according to the supplier specifications and as approved by the Engineer. Vertical tolerances and horizontal alignment tolerances shall not exceed 3/4 in. (19 mm) when measured along a 10 ft. (3 m) straight edge. The maximum allowable offset in any panel joint shall be 3/4 in. (19 mm). The overall vertical tolerance of the wall, (plumbness from top to bottom) shall not exceed 1/2 in. per 10 ft. (13 mm per 3 m) of wall height. The precast face panels shall be erected to insure that they are located within 1 in. (25 mm) from the contract plan offset at any location to insure proper wall location at the top of the wall. Failure to meet this tolerance may cause the Engineer to require the Contractor to disassemble and re-erect the affected portions of the wall. A 3/4 in. (19 mm) joint separation shall be provided between all adjacent face panels to prevent direct concrete to concrete contact. This gap shall be maintained by the use of bearing pads and/or alignment pins.

The back of all panel joints shall be covered by a geotextile filter material attached to the panels with a suitable adhesive. No adhesive will be allowed directly over the joints.

The lightweight fill and embankment placement shall closely follow the erection of each lift of panels. At each soil reinforcement level, the fill material should be roughly leveled and compacted before placing and attaching the soil reinforcing system. The soil reinforcement and the maximum lift thickness shall be placed according to the supplier's recommended procedures except, the lifts for lightweight fill shall not exceed limit specified in special provision LIGHTWEIGHT CELLULAR CONCRETE FILL or as approved by the Engineer. Embankment shall be constructed according to Section 205.

Method of Measurement. Mechanically Stabilized Earth Retaining Wall, Special will be measured for payment in square feet (square meters). The MSE retaining wall will be measured from the top of exposed panel line to the theoretical top of leveling pad line for the length of the wall as shown on the contract plans.

Basis of Payment. This work, excepting the placement of the Lightweight Cellular Concrete Fill within the soil reinforced wall volume shown on the approved shop drawings, precast face panels, architectural treatment, soil reinforcing system, concrete leveling pad and accessories will be paid for at the contract unit price per square foot (square meter) for MECHANICALLY STABILIZED EARTH RETAINING WALL, SPECIAL.

Furnishing and placing Lightweight Cellular Concrete Fill shall be as measured and paid in accordance with the special provision LIGHTWEIGHT CELLULAR CONCRETE FILL.

Other concrete appurtenances such as coping, anchorage slabs, parapets, abutment caps, etc. will not be included in this work, but will be paid for as specified elsewhere in this contract, unless otherwise noted on the plans.

Excavation necessary to place the fill for the MSE wall shall be paid for as STRUCTURE EXCAVATION and/or ROCK EXCAVATION FOR STRUCTURES as applicable, according to Section 502.

TEMPORARY MECHANICALLY STABILIZED EARTH RETAINING WALL, SPECIAL

Description. This work shall consist of preparing the design, furnishing the materials, and constructing the temporary mechanically stabilized earth (TMSE) retaining wall to the lines, grades and dimensions shown in the contract plans and as directed by the Engineer.

General. The TMSE retaining wall shall consist of a sacrificial fascia, a soil reinforcing system and lightweight fill. The soil reinforcement shall have sufficient strength, quantity, and pullout resistance, beyond the failure surface within the lightweight fill, as required by design. The material, fabrication, and construction shall comply with this Special Provision and the requirements specified by the supplier of the wall system selected by the Contractor for use on the project.

The Contractor may select the TMSE retaining wall system from one of the following pre-approved wall systems. As an alternate the Contractor may submit a proposed equal system for full review and approval. The Contractor shall allow a minimum of 30 days for review and approval of the proposed system by the Department:

Hilflker Retaining Walls: Hilfiker Welded Wire
Sanders Pre-Cast Concrete Systems Company: Sanders Wire Wall System
Shaw Technologies: Temporary MSE
Sine Wall, LLC: Sine Wall Wire Face System
SSL Construction Products: MSE Plus Wire Faced
Vist-A-Wall Systems, LLC: Vist-A–Wire Wall
Tensar Earth Technologies: Tensar Temporary
The Reinforced Earth Company: Terratrel
Tricon Precast: Tricon Temporary Wire

Pre-approval of the wall system does not include material acceptance at the jobsite.

Submittals. The wall system supplier shall submit complete design calculations and shop drawings for the TMSE retaining wall system to the Engineer no later than 45 days prior to beginning construction of the wall. No work or ordering of materials for the structure shall be done by the Contractor until the submittal has been approved in writing by the Engineer. All shop drawing submittals shall be sealed by an Illinois Licensed Structural Engineer and shall include all details, dimensions, quantities and cross sections necessary to construct the wall and shall include, but not be limited to the following items:

(a) Plan, elevation and cross section sheet(s) for each wall showing the following:

(1) A plan view of the wall indicating the offsets from the construction centerline to the face of the wall at all changes in horizontal alignment. The plan view shall show the limits of soil reinforcement and stations where changes in length and/or size of reinforcement occur. The centerline shall be shown for all drainage structures or pipes behind or passing through and/or under the wall.

(2) An elevation view of the wall indicating the elevations of the top of the sacrificial fascia. These elevations shall be at or above the top of sacrificial fascia line shown on the contract plans. This view shall show the elevations of the bottom of the sacrificial fascia, all steps in the base of the wall and the finished grade line. Each sacrificial fascia type, the number, size and length of soil reinforcement connected to the sacrificial fascia shall be designated. The equivalent uniform applied service (unfactored) nominal bearing pressure shall be shown for each designed wall section.

(3) A listing of the summary of quantities shall be provided on the elevation sheet of each wall.

(4) Typical cross section(s) showing the limits of the reinforced fill volume included within the wall system, soil reinforcement, embankment material placed behind the fill, sacrificial fascia, and their relationship to the right-of-way limits, excavation cut slopes, existing ground conditions and the finished grade line.

(5) All general notes required for constructing the wall.

(b) The bottom of the sacrificial fascia shall be located at or below the theoretical bottom of sacrificial fascia line shown on the contract plans. The theoretical bottom of sacrificial fascia line shall be 1.5 ft. (450 mm) below finished grade line at the front face of the wall, unless otherwise shown on the plans.

(c) All details of the sacrificial fascia and soil reinforcement placement around all appurtenances located behind, on top of, or passing through the soil reinforced wall volume such as parapets with anchorage slabs, foundations, and utilities etc. shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular system shall also be submitted for approval.

(d) The details for the connection between the sacrificial fascia, and soil reinforcement shall be shown.

The initial submittal shall include three sets of TMSE retaining wall shop drawings and one set of calculations. One set of drawings will be returned to the Contractor with any corrections indicated. After approval, the Contractor shall furnish the Engineer with eight sets of corrected plan prints for distribution by the Department. No work or ordering of materials for the structure shall be done until the submittal has been approved by the Engineer.

Materials. The TMSE retaining walls shall conform to the supplier's standards as previously approved by the Department, and the following:

(a) The soil reinforcing system, which includes the soil reinforcement facing and all connection devices, shall be according to the following:

(1) Inextensible Soil Reinforcement. Steel reinforcement shall be according ASTM A 572 Grade 65 (450), ASTM A1064, ASTM A 1011 or ASTM A 463 Grade 50 (345).

(2) Extensible Soil Reinforcement. Geosynthetic reinforcement shall be monolithically fabricated from virgin high density polyethylene (HDPE) or high tenacity polyester (HTPET) resins having the following properties verified by mill certifications:

Property for Geosynthetic Reinforcement	Value	Test
Minimum Tensile Strength	**	ASTM D 6637

** as specified in the approved design calculations and shown on the shop drawings.

Property for HDPE	Value	Test
Melt Flow Rate (g/cm)	0.060 – 0.150	ASTM D 1238, Procedure B
Density (g/cu m)	0.941 – 0.965	ASTM D 792
Carbon Black	2% (min)	ASTM D 4218

Property for HTPET	Value	Test
Carboxyl End Group (CEG Max) (mmol/kg)	<30	GRI-GG7
Molecular Weight (M_n)	>25,000	GRI-GG8

(3) Facing and Connection Devices.

Mesh facing and Loop Facing Connectors	ASTM A1064 or ASTM A706 Grade 60 (420)
Tie Strip Facing Connectors	AASHTO M 270/M 270M Grade 50 (345)

Sacrificial fascia and connection devices used with geosynthetic soil reinforcement shall be manufactured from virgin or recycled polyvinyl chloride having the following properties:

Property for polyvinyl chloride	Value	Test
Heat Deflection Temperature (°F)	155 - 164	ASTM D 1896
Notched IZOD 1/8 inch @ 73°F (ft-lb/in)	4 – 12	ASTM D 256
Coefficient of Linear Exp. (in/in/°F)	3.5 – 4.5	ASTM D 696
Hardness, Shore D	79	ASTM D 2240

Property for polypropylene	Value	Test
Melt Flow Rate (g/cm)	0.060 – 0.150	ASTM D 1238, Procedure B
Density (g/cu cm)	0.88 – 0.92	ASTM D 792

(f) Lightweight fill, defined as the material placed in the reinforced volume behind the wall, shall be according to the Special Provision for LIGHTWEIGHT CELLULAR CONCRETE FILL.

(g) The sacrificial fascia may consist of a wire mesh, geosynthetic fabric, geosynthetic reinforcement or other suitable material capable of retaining the lightweight fill and transmitting the applied loading to the soil reinforcement. Wire mesh shall be fabricated from cold drawn steel conforming to AASHTO M32 (M32M) and shall be shop fabricated according to AASHTO M55 (M55M). The geosynthetic fabric shall be either a non-woven needle punch polyester or polypropylene or a woven monofilament polypropylene with a minimum non-sewn lap of 12 in. (300 mm) where necessary.

Design Criteria. The design shall be according to the applicable portions of the AASHTO LRFD Design Specifications for Mechanically Stabilized Earth Walls, except as modified herein. The wall supplier shall be responsible for all internal stability aspects of the wall design and shall supply the Department with computations for each designed wall section. The analyses of settlement, bearing capacity and overall slope stability will be the responsibility of the Department.

External loads, such as those applied through structure foundations, from traffic or railroads, slope surcharge etc., shall be accounted for in the internal stability design. The presence of all appurtenances behind, in front of, mounted upon, or passing through the wall volume such as drainage structures, utilities, structure foundation elements or other items shall be accounted for in the internal stability design of the wall.

The design of the soil reinforcing system shall be according to the applicable design specifications for “Inextensible” steel or “Extensible” geosynthetic reinforcement criteria. The reduced section of the soil reinforcing system shall be sized to allowable stress levels at the end of a 3 year design life.

For steel soil reinforcement, the Corrosion protection for the 3 year design life shall be provided using a sacrificial steel thickness computed for all exposed surfaces.

Geosynthetic soil reinforcing systems shall be designed to account for the strength reduction due to long-term creep, chemical and biological degradation, as well as installation damage.

Typical design procedures and details, once accepted by the Department, shall be followed. All wall system changes shall be submitted in advance to the Department for approval.

The sacrificial fascia and its connection to the soil reinforcement shall be sized for a minimum design life of 3 years.

All soil reinforcement elements shall be directly connected to the sacrificial fascia and shall have an allowable pullout capacity, from the sacrificial fascia, based on the maximum tensile loading occurring in the soil reinforcement. The soil reinforcements maximum vertical center to center spacing shall be 20 in. (500 mm) and in the horizontal direction, the clear distance between the edge of one soil reinforcement to the next must not exceed 30 in. (760 mm).

Construction. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include any costs related to this technical assistance in the unit price bid for this item.

The foundation soils supporting the structure shall be graded for a width equal to or exceeding the length of the soil reinforcement. Prior to wall construction, the foundation shall be compacted with a smooth wheel vibratory roller. Any foundation soils found to be unsuitable shall be removed and replaced, as directed by the Engineer, and shall be paid for separately according to Section 202.

As fill material is placed behind a sacrificial fascia element, the sacrificial fascia element shall be maintained in its proper inclined position according to the supplier specifications and as approved by the Engineer. The sacrificial fascia shall be erected to insure that it is located within 3 in. (75 mm) from the nominal contract plan offset at any location.

The lightweight fill and embankment placement shall closely follow the erection of each lift of sacrificial fascia. At each soil reinforcement level, the fill material should be roughly leveled and compacted before placing and attaching the soil reinforcing system. The soil reinforcement and the maximum lift thickness shall be placed according to the supplier's recommended procedures except, the lifts for lightweight fill shall not exceed limit specified in special provision LIGHTWEIGHT CELLULAR CONCRETE FILL or as approved by the Engineer.

Method of Measurement. Temporary Mechanically Stabilized Earth Retaining Wall, Special will be measured for payment in square feet (square meters). The wall will be measured from the top of exposed sacrificial fascia line to the theoretical bottom of sacrificial fascia line for the length of the wall as shown on the contract plans.

Basis of Payment. This work, except placement of the lightweight fill within the soil reinforced wall volume shown on the approved shop drawings, sacrificial fascia, soil reinforcing system, and accessories will be paid for at the contract unit price per square foot (square meter) for TEMPORARY MECHANICALLY STABILIZED EARTH RETAINING WALL, SPECIAL.

Concrete appurtenances such as anchorage slabs, parapets, abutment caps, etc. will not be included in this work, but will be paid for as specified elsewhere in this contract, unless otherwise noted on the plans.

All excavation necessary to construct the TMSE wall shall be paid for as STRUCTURE EXCAVATION according to Section 502.

Furnishing and placing Lightweight Cellular Concrete Fill shall be as measured and paid in accordance with the special provision LIGHTWEIGHT CELLULAR CONCRETE FILL.

FORM LINER TEXTURED SURFACE

The form liner textured surfaces shall conform to applicable portions of Section 503 of the Standard Specifications except as herein modified.

Description. This Work consists of designing, developing, furnishing and installing a form liner textured surface and forming concrete using reusable, high strength urethane and elastomeric form liners to achieve concrete treatment as shown on the Plans. Form liner textured surface shall be of the type specified at locations shown on the Plans or directed by the Engineer, and in accordance with the details shown in the Plans. This work shall also include furnishing and installing reveal and bevel strips.

Materials. Form liners for bridge piers shall be of high quality, highly reusable and capable of withstanding anticipated concrete pour pressures without causing leakage or physical defects. Forms for smooth surfaces shall be plastic coated to provide a smooth surface free of any impression or pattern. Reveals for the barrier walls shall be made of rubber material capable of reproducing the same quality texture on flat and curved surface.

General. Liners shall be attached to each other with flush seams and seams filled necessary to eliminate visible evidence of seams in cast concrete. Liner butt joints shall be blended into the pattern so as to create no vertical joints or reveals. Concrete pours shall be continuous form liner pattern fields. Finished textures shall be continuous without visual disruption and properly aligned over adjacent and multiple liner panels. After each use, liners shall be cleaned and visually inspected. Damaged liner shall be replaced when continued use or repair would diminish the aesthetics of the Work. All surfaces on columns and pier caps exposed to view and not indicated to receive textured liner will receive rubbed finish conforming to Section 503.15 of the Standard Specifications.

Submittals.
Shop drawings of the form liner texture surface shall be provided for each area of textured concrete.

1. Individual form liner pattern descriptions, dimensions and sequencing of form liner sections, typical cross sections, joints, corners, joint locations, edge treatment and any other conditions.

2. Elevation views and layouts showing the full height and length of the structure with each form liner outlined.

3. Two 24”x 24” samples of each texture and two 36”x36” samples with all textures specified, adjacent to each other, for review and approval of formliner texture appearance and overall finish quality, by the Engineer, Department staff and their designees. Samples shall be made of the concrete mix specified for the structure.

4. Mockup: Partial mockup of the front face of a typical single pier with a minimum height of 4’ and an approximate 6” thickness. The mockup must be available for review at the project site by the Engineer, Department staff and their designees. Mockup to be made of the concrete mix specified for structure including the final finish, after approval of individual samples.

No final concrete surfaces shall be cast until the Engineer accepts the final samples and mockup and any submitted materials.

Acceptable Form Liner Manufactures:

1. Custom Rock International, St Paul, MN (Jim Rogers)
2. Scott Systems, Denver, CO
3. Creative Form Liner, INC, Brentwood, MD
4. Approved Equal.

Method of Measurement. This Work will be measured for payment, complete in place, per square feet for FORM LINER TEXTURED SURFACE.

Basis of Payment. This Work will be paid for at the Contract Unit Price per square feet for FORM LINER TEXTURED SURFACE which price includes furnishing and placing all material required, including all labor, equipment and incidentals necessary to complete the Work as herein specified.

TEMPORARY SHORING

Description: This item shall consist of furnishing all material, equipment and labor to support the existing as well as proposed piers during the stage construction at locations shown on the plans, as herein specified and as directed by the Engineer.

Construction Requirements: The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed structural engineer, of the support system he/she proposes to use for approval of the Engineer prior to ordering of material and implementation. Such approval will not relieve the Contractor of responsibility for the safety of the structure.

Basis of Payment: The work specified herein, as shown on the plans and as directed by the Engineer, will be paid for at the contract unit price each for TEMPORARY SHORING at the locations specified.

TEMPORARY SHORING FOR EXISTING STRADDLE BENT

Description: This item shall consist of furnishing all material, equipment and labor to support the existing straddle bent piers during the stage construction at locations shown on the plans, as herein specified and as directed by the Engineer.

Construction Requirements: The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed structural engineer, of the support system he/she proposes to use for approval of the Engineer prior to ordering of material and implementation. Such approval will not relieve the Contractor of responsibility for the safety of the structure.

Basis of Payment: The work specified herein, as shown on the plans and as directed by the Engineer, will be paid for at the contract unit price each for TEMPORARY SHORING FOR EXISTING STRADDLE BENT at the locations specified.

TEMPORARY SHORING FOR EXISTING SB I-55 VAULTED TERMINAL STRUCTURE

Description: This item shall consist of furnishing all material, equipment and labor to support the entire existing vaulted terminal structure along SB I-55 (existing S.N. 016-1055) during the stage construction as shown on the plans, as herein specified and as directed by the Engineer.

Construction Requirements: The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed structural engineer, of the support system he/she proposes to use for approval of the Engineer prior to ordering of material and implementation. Such approval will not relieve the Contractor of responsibility for the safety of the structure.

Basis of Payment: The work specified herein, as shown on the plans and as directed by the Engineer, will be paid for at the contract lump sum price for TEMPORARY SHORING FOR EXISTING SB I-55 VAULTED TERMINAL STRUCTURE.

TEMPORARY SHORING FOR EXISTING RAMP NW VAULTED TERMINAL STRUCTURE

Description: This item shall consist of furnishing all material, equipment and labor to support the entire existing vaulted terminal structure along NB Lake Shore Drive to SB I-55 ramp (existing S.N. 016-1048) during the stage construction as shown on the plans, as herein specified and as directed by the Engineer.

Construction Requirements: The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed structural engineer, of the support system he/she proposes to use for approval of the Engineer prior to ordering of material and implementation. Such approval will not relieve the Contractor of responsibility for the safety of the structure.

Basis of Payment: The work specified herein, as shown on the plans and as directed by the Engineer, will be paid for at the contract lump sum price for TEMPORARY SHORING FOR EXISTING RAMP NW VAULTED TERMINAL STRUCTURE.

BRIDGE DECK GROOVING (LONGITUDINAL)

Description. This item shall consist of furnishing all labor, material and equipment necessary to provide longitudinal deck grooves parallel to the centerline of the roadway. The work shall be done in accordance with the applicable portions of Section 503 of the Standard Specifications, as described herein and as directed by the Engineer.

Materials. The grooving machine shall contain diamond blades mounted on a multi-blade arbor on a self-propelled machine built for grooving hardened concrete surfaces. The grooving machine shall have a depth control device that detects variations in the deck surface and adjusts the cutting head height to maintain a specified depth of groove. The grooving machine shall have a guide device to control multi-pass alignment.

Construction. Longitudinal grooving operation shall not be started until after the expiration of the required curing or protection period and after correcting excessive variations by grinding or cutting has been completed.

The grooves shall be cut into the hardened concrete, parallel to the centerline, using a mechanical saw device equipped with diamond blades that will leave grooves 1/8 inch wide and 3/16 inch ± 1/16 inch deep. The longitudinal grooves shall be spaced at 3/4 inch ± 1/16 inch center-to-center. The grooving shall be stopped 1.0 ft. from the faces of curbs or parapets and 6 inch ± 1 inch from deck drains and expansion joints.

The removal of slurry shall be continuous throughout the grooving operations. The grooving equipment shall be equipped with vacuum slurry pickup equipment which shall continuously pick up water and sawing dust, and pump the slurry to a collection tank.

The slurry shall be disposed of off-site according to Article 202.03 of the Standard Specifications.

Cleanup shall be continuous throughout the grooving operation. All grooved areas of the deck shall be flushed with water as soon as possible to remove any slurry material not collected by the vacuum pickup. Flushing shall be continued until all surfaces are clean.

Method of Measurement. BRIDGE DECK GROOVING (LONGITUDINAL) will be measured for payment in place and the area computed in square yards. No deductions will be made for grooving omissions at deck drains, expansion joints, longitudinal joints or lane lines.

Basis of Payment. Texturing of bridge decks by longitudinal saw cut grooving will be paid for at the contract unit price per square yard for BRIDGE DECK GROOVING (LONGITUDINAL).

CATENARY STRUCTURE FOUNDATIONS

Description. This work shall consist of constructing foundation systems for catenary-related structures including catenary support structures and the catenary dead-end structure.

Construction Requirements. The contractor shall coordinate with Metra concerning the timing and sequencing of construction for all foundation construction. The contractor shall assure that the construction of the foundations does not interfere with or damage existing or proposed construction for railroad tracks, DC catenary lines; railroad signal, AC power, fiber optic, and SCADA/communication lines above or below ground. No materials for construction of the foundations shall be lifted over aerial DC catenary lines, AC power lines, or fiber optic SCADA/communication lines.

The soil at the proposed location of the foundations for each catenary-related structure generally consists of granular type fill materials. However, no soil borings have been taken to confirm specific actual conditions at each proposed foundation location. Borings collected for the new bridge foundations were used in calculating foundation capacities. Encountering of obstructions during foundation system construction will be considered as included in the unit cost of this work and no additional separate payment will be made for the encountering and removal of such items.

During construction, if soils are found to be unsuitable to provide adequate support of the catenary support structure foundations, the Contractor shall notify the Engineer before making of any modifications to the foundations.

The contractor shall assure that spoil material from the excavation for the foundations does not contaminate the existing ballast of Metra or IC RR tracks. Contaminated ballast will be replaced by the Railroads at the Contractor's expense.

Drilled concrete foundations shall be constructed following the IDOT Standard Special Provision for DRILLED SHAFTS IN SOIL, PERMANENT CASING and REINFORCEMENT BARS. Extra care shall be used to assure no loss of surrounding material that may cause destabilization or settlement of subgrade for adjacent existing in-service or future railroad tracks.

Method of Measurement. Construction of catenary structure foundations will be measured for payment by pounds of reinforcement bars furnished and installed, linear feet of permanent casing furnished and installed and cubic yards of concrete furnished and placed.

Basis of Payment. This work will be paid for as DRILLED SHAFT IN SOIL, PERMANENT CASING and REINFORCEMENT BARS as applicable for the work described in each of the listed pay items and shall be considered full payment for all work including miscellaneous ancillary items to construct complete foundation systems.

The costs for all work inefficiencies and delays associated with working near the active railroad tracks of Metra and IC RR to perform the work will be considered to be included in the price bid for this work and no additional compensation will be made. No additional compensation will be allowed for any delays that result from the Contractor's lack of adequate coordination with either Metra and/or the IC RR. No additional compensation will be allowed for any weekend or nighttime hours that may be required to perform this work.

CATENARY SUPPORT STRUCTURE

Description. This work shall consist of furnishing and installing permanent catenary support structures for Metra Tracks 1, 2, 3, and 4. This work shall include furnishing and fabricating the steel structures and erecting of each structure adjacent to and over active railroad tracks. This work includes all structure construction above foundations and includes furnishing and installing anchor rods and down guy stubs into the supporting foundation systems. The installation and cutover of all catenary and associated assemblies on these structures will be performed by Metra. All power and communication lines and their corresponding conduits and aerial terminations will be installed by the contractor with Metra performing the final connections. The quantity, type, fabrication materials and size of the support equipment required for this work shall be coordinated by the Contractor with METRA prior to purchasing any equipment.

Materials. Steel for the catenary support structures and all associated connection hardware shall conform to Sections 505 and 512 of the Standard Specifications. Round HSS structural sections shall be ASTM A500, Grade B; associated connection steel shall be ASTM A36.

Anchor rods for all permanent structures shall be hot-dip galvanized in accordance with Article 521.06 of the Standard Specifications and ASTM F-1554 Grade 55.

Fabreeka or Metra approved equivalent washers, bushings, and pads shall be provided at the base of all permanent catenary support structures for electrical isolation as shown in the plans. There shall be no direct contact between any portion of the permanent steel structures and the attaching anchor bolts or supporting concrete foundations.

All permanent steel shall be hot-dip galvanized in accordance with ASTM A123 and A153.

Construction Requirements. The contractor shall coordinate with Metra and the IC RR concerning the timing and sequencing of erection for the catenary structures. The Contractor shall prepare and submit a staging plan for the erection of the catenary structures to the Engineer for review by the Engineer and the Railroads. The Contractor shall be responsible for assuring that the erection of the catenary support structures does not interfere with rail traffic on existing and proposed railroad tracks, DC catenary lines; and all railroad signal, AC power, and fiber optic SCADA/communication lines.

Detailed shop drawings and assembly drawings shall be furnished for review by the Engineer and Metra prior to fabrication. The contractor shall provide a minimum of 14 calendar days written notice to Metra and the IC RR for all catenary support structure work to be performed within 25 feet of the centerline of the live tracks of either railroad. Work shall not disrupt the schedule of Metra's commuter trains, and shall be performed with railroad flagging during periods between off-peak hours of train traffic. Metra will be the final authority concerning what days and times of day catenary support structure construction can be performed within 25 feet of its tracks and the IC RR for when construction can be performed within 25 feet of its tracks. The Contractor shall be responsible for assessing though coordination with the IC RR and Metra what work windows will be available to construct catenary support structures without interfering with railroad traffic.

All catenary support structures shall conform to the applicable provisions of AREMA.

Method of Measurement. Constructing, furnishing, fabricating, erecting of permanent catenary support structures will be measured for payment per each structure required.

Basis of Payment. This work will be paid for at the contract unit price each for CATENARY SUPPORT STRUCTURE, P-1, CATENARY SUPPORT STRUCTURE, P-2, AND CATENARY SUPPORT STRUCTURE, P-3, which price shall include all materials, equipment, and labor required to provide the permanent catenary support structures. The cost of furnishing and installing anchor bolts and Fabreeka electrical isolation washers, bushings and pads will be considered to be included in the price for this work. The cost of furnishing and installing the down guy and power/communication terminations and associated structure mounted conduit will be considered to be included in the price for this work.

Cost for furnishing all equipment for the power cable support systems as described herein will not be paid for separately and shall be included in the cost of this item.

Costs associated with obtaining work space from the Railroads to stage material and equipment to facilitate the work 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 costs for all work inefficiencies and delays associated with working near the active railroad tracks of Metra and IC RR to perform the work will be considered to be included in the price bid for these two pay items of this special provision and no additional compensation will be made. No additional compensation will be allowed for any delays that result from the Contractor's lack of adequate coordination with either Metra and/or the IC RR. No additional compensation will be allowed for any weekend or nighttime hours that may be required to be worked for catenary support structure related work.

ELECTRIC CABLE IN CONDUIT, COMMUNICATION

Description. This item will consist of furnishing and installing a fiber optic cable in conduit or raceway including all required accessories, as specified herein, as shown on the plans and as directed by the Engineer.

General. The fiber optic cable shall be installed in accordance with Section 871 of the Standard Specifications.

Materials. The fiber optic cable shall be out door rated, all dielectric, gel-free, single mode fiber with a 6 bundles of 12 fibers for a total of 72 fibers. The optical characteristics of the fiber shall be equivalent to CORNING ALTOS single mode fiber. The fiber optic cable shall be CORNING ALTOS Part #072EU4-64101D20 or approved equal.

Substitution for this cable shall be submitted for approval by METRA before purchasing.

Construction Requirements. The cable shall be continuous over its length with no intermediate splices of its fibers permitted.

A minimum of 30 feet of slack cable shall be provided and neatly coiled in each manhole and junction box.

Care shall be given to assure the cables are installed without damaging their insulation or exterior jackets. Cable lubricant shall be used when pulling cables into conduits. The lubricant shall be on-injurious to conduits, conductors, insulation or jackets. Cable pulling apparatus shall have no sharp edges or protrusions which could damage cables or raceways. Wire and cable shall not be bent to a radius less than the manufacturer's recommended bending radius during or after installation. All installations shall follow the requirements of the latest revision of the National Electric Code.

The cable shall be installed directly from the reels on which the cable is shipped. Dragging or laying cable on the ground will not be permitted.

METRA will make all fiber connections and splices to connect the temporary cable to the existing aerial SCADA/Communication cable. All installations shall follow the requirements of the latest revision of the National Electric Code.

Cable Placement into Conduit Risers. Kellum grips and/or other hanger devices shall be used to support the vertical drop of cable and to prevent any possible kinking of the cable after installation. The top of the risers shall have a hex nut type watertight service entrance connector with an oval shaped grommet. The grommet shall be either neoprene or rubber. The voids between the fiber optic cable(s) and the grommet shall be sealed with silicone.

The fiber optic cable shall be tested according to Article 801.13(d).

After the permanent aerial cables have been installed and tested by METRA, the Contractor shall remove and dispose of the temporary cable. Removal of the temporary cable will not be paid for separately and shall be included in the cost of this pay item.

Method of Measurement. The fiber optic cable will be measured for payment in feet in place. Measurements will be made in straight lines between changes in direction and include the excess cable coiled and placed in the manholes.

Basis of Payment. This work will be paid for at the contract unit price per foot installed for ELECTRICAL CABLE IN CONDUIT, COMMUNICATION upon completion of construction, which price shall include all materials, labor, equipment, miscellaneous hardware and incidentals to furnish and install the cable.

ELECTRIC CABLE IN CONDUIT, 15KV (EPR TYPE MV-105), 1/C 500MCM
ELECTRIC CABLE IN CONDUIT, 15KV (EPR TYPE MV-105), 1/C 1000MCM

Description. This item will consist of furnishing and installing 15KV rated power cable in conduit or raceway including all required accessories, as specified herein, as shown on the plans and as directed by the Engineer.

This work consists of furnishing and installing 15KV rated electric power cables in conduit for METRA's 4160-volt, three-phase, Light and Power System (Normal and Auxiliary) and 2400-volt, single-phase, Signal Power System (Normal and Auxiliary).

General Requirements. All work shall be in accordance with Section 801 of the Standard Specifications, unless otherwise modified herein and with METRA's requirements.

Materials. The cable shall shall be single conductors rated 15KV. Each cable must be Class "B" compact concentric stranded, 1350 aluminum alloy per ASTM conductors with an extruded thermosetting compound, semiconducting strand screen of ethylene propylene rubber (EPR) or other conductor shield compound. The insulation must be 175 mil minimum thickness of insulation, and an extruded insulation screen. A helically applied 5 mil copper tape shield, with 33 percent minimum overlap and an outer jacket of PVC must also be applied to the conductor.

The conductor screen insulation and insulation screen must be applied through a triple tandem, dual-tandem, or true triple extrusion process to inhibit the introduction of contamination.

The conductor stand screen must be an extruded, semi-conducting, thermosetting compound. It must be free stripping from the conductor and inseparably bonded to the overlying insulation. The thickness of the strand screen must not be considered part of the insulation thickness. The minimum thickness of the strand screen must be 2.5 mils. The conductor strand screen must comply with the requirements of AEIC specification CS8, latest edition.

Cables must be suitable for operation in wet or dry locations and must be rated 105 degree C for continuous operation, 140 degree C for overload operation, and 250 degree C for short circuit conditions.

Cables must be UL listed at 15KV and must meet or exceed the requirements of ANSI/ICEA S-97-682 and AEIC CS8 latest edition for Ethylene Propylene Rubber (EPR) insulated shielded power cables.

The factory partial discharge test must be flat chart when performed in accordance with AEIC. The cable must exhibit 5 pico coulombs or less at a test voltage of 4 times rated voltage to ground.

Cable must be free of insulation or jacket repairs, and only full reels that have successfully passed the above tests will be accepted. Cables that have failed under test must not be shipped even if the failed portion is removed.

Shop Drawings including details for manufacturing of proposed cables shall be submitted to and be approved by METRA prior to placing an order with the cable manufacturer.

Construction Requirements. The Contractor must prepare and submit to METRA for review before fabrication and assembly of equipment each of the following:

The shop drawing submittal must also include the cable manufacturer's AEIC qualification test data, cable splice kits, cable termination kits, pulling compound, and the names with telephone numbers of qualified personnel who are to provide technical field direction.

The maximum allowable pulling tension, maximum allowable sidewall tension and minimum bending radius for this cable construction must be included.

The Contractor must submit for record and distribution, prior to shipment of equipment each of the following:

Prior to delivery of the cable to the site, the Contractor must submit test reports, certified and notarized.

Each certified test report must include all factory and production tests required by AEIC. All testing must be done on the shipping reels.

Each certified test report must include the cable footage identification marker numbers.

Each certified test report must include all signed electrical test reports and the corona (partial discharge) chart, X-Y recording.

Installation. The Contractor must install the power cable in strict accordance with the accepted shop drawings and the power cable manufacturer's recommendations.

The installation of cables into conduits and underground duct banks must be accomplished without subjecting the cable to mechanical stresses, sharp bends or other abuse that would injure either the conductor, insulation, or cable construction.

All preliminary operations must be completed before the cable pulling is started to avoid interruptions to the pulling sequence and attendant increased pulling forces.

Each reel of cable must be set up on jacks close to the duct/conduit entrance in such a manner that the cable must be unreeled and fed into the conduit without changing the direction of the bend. A flexible feeder tube must be used for feeding the cable directly into the duct from the reel. The feeder tube must be not less than the size of the conduit and must be continuous from conduit entrance.

The Drawings indicate conduit layouts located so as to limit the pulling tension necessary to install the cables. In each instance, the cable pulling setup must be in such a direction so as to minimize the pulling tensions at elbows and offsets. In no case must cable be pulled through pull boxes.

During installation, cables must be handled with all due care, avoiding sharp bends, abrasion, or contact with foreign surfaces other than the feed-in tube. Dragging of cables on the ground or floor or over the sharp edges of pull boxes is NOT acceptable. All cable pulling must be performed in mild weather, where the temperatures exceed 40 degrees F. Cable reels must be carefully handled and stored while awaiting cable installation. Cable reel or lagging damage must constitute evidence of mishandling and cause that entire reel to be rejected.

Pulling lubricant must be liberally applied to the cables as they are placed into the feed-in tubes, so as to result in an overall coefficient of sliding friction between the cable and the conduit of no more than 20 percent.

The pulling rig must consist of adjustable channels with two large diameter pulley wheels, one to be placed even with the conduit mouth and one above the conduit end. The winch used must be of the powered type and must be rigged with a dynamometer to indicate the actual pulling tension. In no case must the cable be constricted to a bending radius less than that recommended by the cable manufacturer.

The cable must be carefully inspected as it passes into the feeder tube for irregularities or other evidence of damage that might be indicative of weakness in the cable or lessen its serviceability.

Cables must be pulled with a pulling eye fixed to the conductor. The maximum permissible pulling tension must not exceed the following values as indicated on the dynamometer:

Straight runs must be 2,000 pounds, or no more than 50% of the manufacturers recommended maximum.

Runs with bends must be 340 pounds time radius of bend in feet. The minimum bending radius must be 5 feet.

When cable pulling tensions are exceeded, the cable must be pulled out and replaced.

If basket weave pulling grips are applied over the cables, pulling tension must be limited to 1,000 pounds or 1,000 psi of jacket, whichever is smaller.

The Contractor must not install the cable in equipment unless the equipment is in place.

The maximum reading of the dynamometer must be recorded and delivered to the METRA for each cable pull.

Service Engineer. The cable manufacturer must provide a qualified factory trained service engineer to provide technical direction for the installation.

The service engineer must certify and must provide written certification that the cable has been installed in accordance with the cable manufacturer's recommendations.

The service engineer must be available as long as these services are requested.

Cable Installation in Ducts and Conduit. The ends of all cables must be sealed with Scotch Number 88 tape and with 3M PST cable and sealing caps or approved equal before pulling into duct, and must be left so sealed until ready for termination.

Cable must be installed by methods which insure against harmful stretching of the conductor, injury to the insulation, or damage to the outer protective covering.

Where more than one cable will be installed in a duct or conduit, all must be pulled in at the same time.

Cable lubricants listed by Underwriters' Laboratories, Inc., must be used.

Cable Splices and Terminations. Cable must be continuous from the weather head on new Structure P-1 to the weather head on new Structure P-3. Below grade spices are not allowed. No splices must be pulled into conduit.

All cable splices, connections and terminations will be performed by METRA forces. The Contractor will procure and furnish to METRA all the necessary termination and splicing kits required to splice and terminate the new 15KV cables to the existing METRA cables. The splicing kits shall be the cold shrink type and contain all the necessary components to complete the splice. The cold shrink termination kits shall be as manufactured by 3M, RAYCHEM or approved equal. The termination and splice kits must comply with NEC,be in strict accordance with IEEE404 and the cable manufacturer's recommendations.

Cables must be installed and trained by electrical crews experienced in this type of Work.
Single conductor cables must be bent to an inner radius not less than 20 times the outside diameter of the cable.

Cables must be placed so as not to block access to spare duct cells nor the cable pulling irons.

Each cable must be supported independently of other cables, so that the weight of one cable does not bear upon any other. Each cable must be supported every thirty inches along the pull box.

Cables must have sufficient slack to permit free movement due to thermal expansion and contraction without stresses.

All cable terminations and all cable splices must be installed with grounding connections made to the shielding conductors, using silver plated, extra flexible braided copper. Connections must be made to the grounding cable and the locally installed grounding system.

Cable Acceptance and Proof Testing. After all cable installation operations have been completed, including splices and terminations, the individual conductors of all cables must have a high potential acceptance test applied.

The tests must be made using an approved DC Hi-Pot tester. Voltage must be applied between each conductor and the other conductors which are grounded, using the test values listed in Tables I and II, this specification. The test results must be recorded on FORM A.

The circuit must be made ready to energize with all splices and terminations properly completed, and with any working apparatus disconnected. In cases where it may be impractical to disconnect the cable from the apparatus, it must be noted that this associated equipment may not be able to withstand the same voltage as the cable and due caution should be observed. All shields and conductors, including any other cables in the same apparatus, should be grounded at the test end. A DC test potential in accordance with Table I or II is applied for the following time period:

Acceptance must be 15 minutes for shielded cable.

Proof test must be 5 minutes for shielded cable.

Any cable which fails to meet the acceptance or proof tests must be removed and replaced by the Contractor, without additional cost to the City. Any splice or termination which fails must be repaired or replaced as determined by the Engineer.

All new cables provided due to failures during the warranty or the acceptance and proof tests must be tested in the same manner and at the same times as the original new cables provided by this Contract.
The Contractor must maintain a readily available supply of replacement cables so that in the case of a cable failure no delays must occur in the prompt replacement or repair of the faulty cable.

Tests must be performed in accordance with ICEA and AEIC recommended procedures by an independent specialty testing service regularly engaged in the business of cable testing. The Contractor must notify the METRA two weeks prior to each test that these tests can be witnessed by the METRA. Certified copies of all tests must be delivered to the METRA upon completion of all tests.

Whenever the new 15 KV cables are spliced or otherwise connected to existing cables which are older, have a lower insulation level or have a different construction, the test voltage and time duration applied to this combination must not exceed the lower of the specified values for the different types of cable. It is the Contractor's sole responsibility to check the conditions and to establish these test values before setting up the tests.

TABLE I

DC HIGH VOLTAGE INSTALLATION TEST*

(Acceptance Test)

Rated Cable Phase To Phase, Volts Level	Conductor Size, AWG, or KCM	Test Voltage, (KV) 100 Percent Insulation Level
2001 - 5000	6 - 1000	25

* The Voltages in this table are for newly manufactured cables only. When spliced to older cable, a reduction in test voltage may be required, see Table II.

TABLE II

DC VOLTAGE MAINTENANCE TEST

(Proof Test)

Length of Time in Years After Installation	Test Voltage in Percent of Test I Value
1	80.0
5	**64.0**
10	49.0
15	39.0

FORM A

DATA SHEET FOR 15 KV POWER CABLE HIGH POTENTIAL TEST

Date_____

Project Name_____

Cable MFR_____ Cable No._____

Cable Size_____ Cable Rated Voltage_____

Location_____ Cable Length_____

No. Conductors_____ Cable Insulation_____

Ambient Temperature_____ Relative Humidity_____

Test Equipment, Type_____ Serial No._____

Acceptance Test_____ Proof Test_____

READING ON VOLTAGE RISE						READINGS WITH VOLTAGE CONSTANT				
Test Voltage	Leakage I in Micro-Amps					Time in Minutes	Leakage I in Micro-Amps			
	Phase A	Phase B	Phase C				Phase A	Phase B	Phase C	

DISCHARGE LEVEL

A	30 Sec.	_____KV		60 Sec.	_____KV
B	30 Sec.	_____KV		60 Sec.	_____KV
C	30 Sec.	_____KV		60 Sec.	_____KV

TEST PERFORMED BY:_____
Signature Date

TEST WITNESSED BY:_____
Signature Date

The contractor shall supply sufficient slack cable at each catenary mounted terminating junction box to allow METRA to pull it up the catenary structures and splice the conductors with those of the existing overhead ones. A minimum of 30 feet of excess cable, contiguous with the portion placed in duct, shall be provided and be neatly coiled and placed in each of the terminating junction boxes. All cables shall be furnished and installed continuous over their full length between terminating junction boxes with no intermediate splices permitted.

Care shall be given to assure the cables are installed without damaging the cable insulation or exterior jackets. Cable lubricant shall be used when pulling cables into conduits. The lubricant shall be non-injurious to conduits, conductors, insulation or jackets. Cable pulling apparatus shall have no sharp edges or protrusions which could damage cables or raceways. Wire and cable shall not be bent to a radius less than the manufacturer's recommended bending radius during or after installation. All installations shall follow the requirements of the latest revision of the National Electric Code.

The cable shall be installed directly from the reels on which the cable is shipped. Dragging or laying cable on the ground will not be permitted.

All temporary cable placed in ducts shall be removed and disposed of by the contractor after they are no longer needed by METRA.

Method of Measurement. Furnishing and installing electric power cable will be measured for payment in feet in place. Measurements will be made in straight lines between changes in direction and include the required excess cable placed in terminating junction boxes.

Basis of Payment. This work will be paid for at the contract unit price per foot installed for ELECTRICAL CABLE IN CONDUIT, 15KV of the type, size, and number of conductors specified, which price shall include all materials, labor, equipment, miscellaneous hardware and incidentals to furnish and install the cable.

This pay item will also include all costs associated with the removal and disposal of all temporary cable.

ELECTRIC CABLE IN CONDUIT, 5KV (EPR TYPE MV-105), 1/C NO. 4/0
ELECTRIC CABLE IN CONDUIT, 5KV (EPR TYPE MV-105), 1/C NO. 350MCM

Description. This item will consist of furnishing and installing 5KV power cable in conduit or raceway including all required accessories, as specified herein, as shown on the plans and as directed by the Engineer.

This work consists of furnishing and installing 5KV rated electric power cables in conduit for METRA's 4160-volt, three-phase, Light and Power System (Normal and Auxiliary) and 2400-volt, single-phase, Signal Power System (Normal and Auxiliary).

General Requirements. All work shall be in accordance with Section 801 of the Standard Specifications, unless otherwise modified herein and with METRA's requirements.

Materials. The cable shall shall be single conductors rated 5/8 KV or 8 KV. Each cable must be Class "B" stranded, copper conductors with an extruded thermosetting compound, semiconducting strand screen of ethylene propylene rubber (EPR) or other conductor shield compound. The insulation must be 175 mil minimum thickness of insulation, and an extruded insulation screen. A helically applied 5 mil copper tape shield, with 33 percent minimum overlap and an outer jacket of PVC must also be applied to the conductor.

The conductor screen insulation and insulation screen must be applied through a triple tandem, dual-tandem, or true triple extrusion process to inhibit the introduction of contamination.

The conductor stand screen must be an extruded, semi-conducting, thermosetting compound. It must be free stripping from the conductor and inseparably bonded to the overlying insulation. The thickness of the strand screen must not be considered part of the insulation thickness. The minimum thickness of the strand screen must be 2.5 mils. The conductor strand screen must comply with the requirements of AEIC specification CS8, latest edition.

Cables must be suitable for operation in wet or dry locations and must be rated 105 degree C for continuous operation, 140 degree C for overload operation, and 250 degree C for short circuit conditions.

Cables must be UL listed at 5/8 KV or 8KV and must meet or exceed the requirements of AEIC latest edition.

The factory partial discharge test must be flat chart when performed in accordance with AEIC. The cable must exhibit 5 pico coulombs or less at a test voltage of 4 times rated voltage to ground.

Cable must be free of insulation or jacket repairs, and only full reels that have successfully passed the above tests will be accepted. Cables that have failed under test must not be shipped even if the failed portion is removed.

Details for manufacturing of proposed cables shall be submitted to and be approved by METRA prior to placing an order with the cable manufacturer.

Construction Requirements. The Contractor must prepare and submit to METRA for review before fabrication and assembly of equipment each of the following:

The shop drawing submittal must also include the cable manufacturer's AEIC qualification test data, cable splice kits, cable termination kits, pulling compound, and the names with telephone numbers of qualified personnel who are to provide technical field direction.

The maximum allowable pulling tension, maximum allowable sidewall tension and minimum bending radius for this cable construction must be included.

The Contractor must submit for record and distribution, prior to shipment of equipment each of the following:

Prior to delivery of the cable to the site, the Contractor must submit test reports, certified and notarized.

Each certified test report must include all factory and production tests required by AEIC. All testing must be done on the shipping reels.

Each certified test report must include the cable footage identification marker numbers.

Each certified test report must include all signed electrical test reports and the corona (partial discharge) chart, X-Y recording.

Installation. The Contractor must install the power cable in strict accordance with the accepted shop drawings and the power cable manufacturer's recommendations.

The installation of cables into conduits and underground duct banks must be accomplished without subjecting the cable to mechanical stresses, sharp bends or other abuse that would injure either the conductor, insulation, or cable construction.

All preliminary operations must be completed before the cable pulling is started to avoid interruptions to the pulling sequence and attendant increased pulling forces.

Each reel of cable must be set up on jacks close to the duct/conduit entrance in such a manner that the cable must be unreeled and fed into the conduit without changing the direction of the bend. A flexible feeder tube must be used for feeding the cable directly into the duct from the reel. The feeder tube must be not less than the size of the conduit and must be continuous from conduit entrance.

The Drawings indicate conduit layouts located so as to limit the pulling tension necessary to install the cables. In each instance, the cable pulling setup must be in such a direction so as to minimize the pulling tensions at elbows and offsets. In no case must cable be pulled through pull boxes.

During installation, cables must be handled with all due care, avoiding sharp bends, abrasion, or contact with foreign surfaces other than the feed-in tube. Dragging of cables on the ground or floor or over the sharp edges of pull boxes is NOT acceptable. All cable pulling must be performed in mild weather, where the temperatures exceed 40 degrees F. Cable reels must be carefully handled and stored while awaiting cable installation. Cable reel or lagging damage must constitute evidence of mishandling and cause that entire reel to be rejected.

Pulling lubricant must be liberally applied to the cables as they are placed into the feed-in tubes, so as to result in an overall coefficient of sliding friction between the cable and the conduit of no more than 20 percent.

The pulling rig must consist of adjustable channels with two large diameter pulley wheels, one to be placed even with the conduit mouth and one above the conduit end. The winch used must be of the powered type and must be rigged with a dynamometer to indicate the actual pulling tension. In no case must the cable be constricted to a bending radius less than that recommended by the cable manufacturer.

The cable must be carefully inspected as it passes into the feeder tube for irregularities or other evidence of damage that might be indicative of weakness in the cable or lessen its serviceability.

Cables must be pulled with a pulling eye fixed to the conductor. The maximum permissible pulling tension must not exceed the following values as indicated on the dynamometer:

Straight runs must be 2,000 pounds, or no more than 50% of the manufacturers recommended maximum.

Runs with bends must be 340 pounds time radius of bend in feet. The minimum bending radius must be 5 feet.

When cable pulling tensions are exceeded, the cable must be pulled out and replaced.

If basket weave pulling grips are applied over the cables, pulling tension must be limited to 1,000 pounds or 1,000 psi of jacket, whichever is smaller.

The Contractor must not install the 5/8 KV cable in equipment unless the equipment is in place.

The maximum reading of the dynamometer must be recorded and delivered to the METRA for each cable pull.

Service Engineer. The cable manufacturer must provide a qualified factory trained service engineer to provide technical direction for the installation.

The service engineer must certify and must provide written certification that the cable has been installed in accordance with the cable manufacturer's recommendations.

The service engineer must be available as long as these services are requested.

Cable Installation in Ducts and Conduit. The ends of all cables must be sealed with Scotch Number 88 tape and with 3M PST cable and sealing caps or approved equal before pulling into duct, and must be left so sealed until ready for termination.

Cable must be installed by methods which insure against harmful stretching of the conductor, injury to the insulation, or damage to the outer protective covering.

Where more than one cable will be installed in a duct or conduit, all must be pulled in at the same time.

Cable lubricants listed by Underwriters' Laboratories, Inc., must be used.

Cable Splices and Terminations. Cable must be continuous from the weatherhead on new Structure P-1 to the weather head on new Structure P-3. Below grade spices are not allowed. No splices must be pulled into conduit.

All cable splices, connections and terminations will be performed by METRA forces. The Contractor will procure and furnish to METRA all the necessary termination and splicing kits required to splice and terminate the new 5KV cables to the existing METRA cables. The termination and splice kits must comply with NEC and be in strict accordance with the cable manufacturer's recommendations.

Cables must be installed and trained by electrical crews experienced in this type of Work.

Single conductor cables must be bent to an inner radius not less than 20 times the outside diameter of the cable.

Cables must be placed so as not to block access to spare duct cells nor the cable pulling irons.

Each cable must be supported independently of other cables, so that the weight of one cable does not bear upon any other. Each cable must be supported every thirty inches along the pull box.

Cables must have sufficient slack to permit free movement due to thermal expansion and contraction without stresses.

All cable terminations and all cable splices must be installed with grounding connections made to the shielding conductors, using silver plated, extra flexible braided copper. Connections must be made to the grounding cable and the locally installed grounding system.

Cable Acceptance and Proof Testing. After all cable installation operations have been completed, including splices and terminations, the individual conductors of all cables must have a high potential acceptance test applied.

The tests must be made using an approved DC Hi-Pot tester. Voltage must be applied between each conductor and the other conductors which are grounded, using the test values listed in Tables I and II, this specification. The test results must be recorded on FORM A.

The circuit must be made ready to energize with all splices and terminations properly completed, and with any working apparatus disconnected. In cases where it may be impractical to disconnect the cable from the apparatus, it must be noted that this associated equipment may not be able to withstand the same voltage as the cable and due caution should be observed. All shields and conductors, including any other cables in the same apparatus, should be grounded at the test end. A DC test potential in accordance with Table I or II is applied for the following time period:

Acceptance must be 15 minutes for shielded cable.

Proof test must be 5 minutes for shielded cable.

Any cable which fails to meet the acceptance or proof tests must be removed and replaced by the Contractor, without additional cost to the City. Any splice or termination which fails must be repaired or replaced as determined by the Engineer.

All new cables provided due to failures during the warranty or the acceptance and proof tests must be tested in the same manner and at the same times as the original new cables provided by this Contract.

The Contractor must maintain a readily available supply of replacement cables so that in the case of a cable failure no delays must occur in the prompt replacement or repair of the faulty cable.

Tests must be performed in accordance with ICEA and AEIC recommended procedures by an independent specialty testing service regularly engaged in the business of cable testing. The Contractor must notify the METRA two weeks prior to each test that these tests can be witnessed by the METRA. Certified copies of all tests must be delivered to the METRA upon completion of all tests.

Whenever the new 5 KV cables are spliced or otherwise connected to existing cables which are older, have a lower insulation level or have a different construction, the test voltage and time duration applied to this combination must not exceed the lower of the specified values for the different types of cable. It is the Contractor's sole responsibility to check the conditions and to establish these test values before setting up the tests.

TABLE I
DC HIGH VOLTAGE INSTALLATION TEST*
(Acceptance Test)

Rated Cable Phase To Phase, Volts Level	Conductor Size, AWG, or KCM	Test Voltage, (KV) 100 Percent Insulation Level
2001 - 5000	6 - 1000	25

* The Voltages in this table are for newly manufactured cables only. When spliced to older cable, a reduction in test voltage may be required, see Table II.

TABLE II
DC VOLTAGE MAINTENANCE TEST
(Proof Test)

Length of Time in Years After Installation	Test Voltage in Percent of Test I Value
1	80.0
5	**64.0**
10	49.0
15	39.0

FORM A

DATA SHEET FOR 5 KV POWER CABLE HIGH POTENTIAL TEST

Date_____

Project Name_____

Cable MFR_____ Cable No._____

Cable Size_____ Cable Rated Voltage_____

Location_____ Cable Length_____

No. Conductors_____ Cable Insulation_____

Ambient Temperature_____ Relative Humidity_____

Test Equipment, Type_____ Serial No._____

Acceptance Test_____ Proof Test_____

READING ON VOLTAGE RISE						READINGS WITH VOLTAGE CONSTANT				
Test Voltage	Leakage I in Micro-Amps					Time in Minutes	Leakage I in Micro-Amps			
	Phase A	Phase B	Phase C				Phase A	Phase B	Phase C	

DISCHARGE LEVEL

A	30 Sec. _____KV		60 Sec. _____KV	
B	30 Sec. _____KV		60 Sec. _____KV	
C	30 Sec. _____KV		60 Sec. _____KV	

TEST PERFORMED BY:_____
Signature Date

TEST WITNESSED BY:_____
Signature Date

The contractor shall supply sufficient slack cable at each catenary mounted terminating junction box to allow METRA to pull it up the catenary structures and splice the conductors with those of the existing overhead ones. A minimum of 30 feet of excess cable, contiguous with the portion placed in duct, shall be provided and be neatly coiled and placed in each of the terminating junction boxes. All cables shall be furnished and installed continuous over their full length between terminating junction boxes with no intermediate splices permitted.

Care shall be given to assure the cables are installed without damaging the cable insulation or exterior jackets. Cable lubricant shall be used when pulling cables into conduits. The lubricant shall be non-injurious to conduits, conductors, insulation or jackets. Cable pulling apparatus shall have no sharp edges or protrusions which could damage cables or raceways. Wire and cable shall not be bent to a radius less than the manufacturer's recommended bending radius during or after installation. All installations shall follow the requirements of the latest revision of the National Electric Code.

The cable shall be installed directly from the reels on which the cable is shipped. Dragging or laying cable on the ground will not be permitted.

All temporary cable placed in ducts shall be removed and disposed of by the contractor after they are no longer needed by METRA.

Method of Measurement. Furnishing and installing electric power cable will be measured for payment in feet in place. Measurements will be made in straight lines between changes in direction and include the required excess cable placed in terminating junction boxes.

Basis of Payment. This work will be paid for at the contract unit price per foot installed for ELECTRICAL CABLE IN CONDUIT, 5KV of the type, size, and number of conductors specified, which price shall include all materials, labor, equipment, miscellaneous hardware and incidentals to furnish and install the cable.

This pay item will also include all costs associated with the removal and disposal of all temporary cable.

REMOVE EXISTING CATENARY SUPPORT SYSTEM COMPLETE

Description. This item consists of the disconnecting, removing, and disposing of the existing METRA catenary support system as described herein, as shown on the plans, as directed by METRA and the Engineer and made obsolete by the new work.

The work shall include, but not be limited to, removing all brackets, hangars, catenary support assemblies, support arms, clips, insulators, clevis', mounting hardware and appurtenances required to support the existing catenary wire system.

General Requirements. All removal work shall be in accordance with the Standard Specifications.

Removal. No removal work shall be permitted without approval from the Engineer. All removal work shall be coordinated with METRA.

All equipment removed will become property of the Contractor and shall be disposed of properly offsite.

No additional compensation will be allowed for work required to remove the existing catenary support system completely, even though not explicitly shown on the Drawings or specified herein.

Method of Measurement. Disconnection, removal, and disposal of the existing catenary support system and associated equipment complete shall be counted, each.

Basis of Payment. This work will be paid for at the Contract unit price each for REMOVE EXISTING CATENARY SUPPORT SYSTEM COMPLETE.

CONDUIT ENCASED, REINFORCED CONCRETE, 4" DIA., PVC 4 WIDE X 3 HIGH

Description. This work will consist of furnishing and installing a concrete encased conduit ductbank including all fittings and accessories as shown on the plans, as required for a complete installation and as directed by the Engineer.

General Requirements. General requirements must be in accordance with Articles 801 and 810 of the Standard Specifications.

Materials. Materials shall be according to the Section 810.02 of the Standard Specifications

Installation. Installation shall be as described in Article 810.04 and 810.05(d) of the Standard Specifications.

Method of Measurement. This work will be measured for payment in feet in place. Measurements will be made in straight lines along the centerline of the conduit between ends and changes in direction.

Vertical conduit will be measured for payment. The vertical distance required for breakaway devices, barrier wall, concrete pedestals, etc. and the depth of any burial will be measured. Changes in direction assume perfect straight ling runs, ignoring actual raceway sweeps.

Basis of Payment. This work will be paid for at the contract unit price per foot for CONDUIT ENCASED, of the type, diameter and number of raceways wide by the number of raceways high specified. Reinforcement bars will not be paid for separately.

CONDUIT ENCASED, REINFORCED CONCRETE, 6" DIA., PVC 4 WIDE X 2 HIGH

Description. This work will consist of furnishing and installing a concrete encased conduit ductbank including all fittings and accessories as shown on the plans, as required for a complete installation and as directed by the Engineer.

General Requirements. General requirements must be in accordance with Sections 801 and 810 of the Standard Specifications.

Materials. Materials shall be according to the Article 810.02 of the Standard Specifications

Installation and Conduit Assembly. Installation and conduit assembly shall be as described in Articles 810.04 and 810.05(d) of the Standard Specifications.

Conduit Plugs and Sealing Bushings. The Contractor shall provide watertight conduit sealing bushings and expandable mechanical conduit plugs at each end of each raceway in the ductbank to prevent water from seeping into the raceways. The Contractor shall provide any additional equipment required to install the conduit sealing bushings and plugs in PVC conduit at no additional cost.

Expandable mechanical conduit plugs shall be installed at each end of the conduit run for empty raceways that contain no cables. Conduit sealing bushings shall be installed at each end of the conduit run in raceways that contain cables. The conduit sealing bushings shall be as manufactured by EMERSON/O-Z GEDNEY or approved equal. The expandable mechanical conduit plugs shall be as manufactured by CAL AM Manufacturing, KWIKIE PLUG Series or approved equal.

Method of Measurement. This work will be measured for payment in feet in place. Measurements will be made in straight lines along the centerline of the conduit between ends and changes in direction.

Vertical conduit will be measured for payment. The vertical distance required for breakaway devices, barrier wall, concrete pedestals, etc. and the depth of any burial will be measured. Changes in direction assume perfect straight ling runs, ignoring actual raceway sweeps.

Basis of Payment. This work will be paid for at the contract unit price per foot for CONDUIT ENCASED, of the type, diameter and number of raceways wide by the number of raceways high specified. Reinforcement bars, conduit plugs and conduit sealing bushings will not be paid for separately.

GROUND ROD (METRA WORK)

Description. This item shall consist of furnishing, installing and connecting ground rods for the grounding of service neutral conductors and for supplementing the equipment grounding system via connection at poles or other equipment throughout METRA's electrical system.

All materials and work shall be in accordance with Article 250 of the NEC and Section 806 of the Standard Specifications.

Materials. Materials shall be according to the following Articles of Section 1000 - Materials

Item	Article/Section
(a) Grounding Electrodes	1087.01(b)
(b) Grounding Electrode Conductors	1087.01(a)
(c) Access Well	1087.01(c)

CONSTRUCTION REQUIREMENTS

General. All connections to ground rods, structural steel or fencing shall be made with exothermic welds. Where such connections are made to insulated conductors, the connection shall be wrapped with at least 4 layers of electrical tape extended six inches onto the conductor insulation.

Ground rods shall be driven so that the tops of the rod are 24 inches below finished grade. Where indicated, ground wells shall be included to permit access to the rod connections.

Where indicated, ground rods shall be installed through concrete foundations.

Where ground conditions, such as rock, preclude the installation of the ground rod, the ground rod may be deleted with the approval of the Engineer.

Where a ground field of "made" electrodes is provided, such as at control cabinets, the exact locations of the rods shall be documented by dimensioned drawings as part of the Record Drawings. Ground rod connection shall be made by exothermic welds. Ground wire for connection to foundation steel or as otherwise indicated shall be stranded uncoated bare copper in accordance the applicable requirements of ASTM Designation B-3 and ASTM Designation B-8 and shall be included in this item. Unless otherwise indicated, the wire shall not be less than No. 2 AWG.

Where connections are made to epoxy coated reinforcing steel, the epoxy coating shall be sufficiently removed to facilitate the exothermic weld.

Ground rod connection must be made by approved clamps. Ground wire for connection to foundation steel, or as otherwise indicated, must be stranded uncoated bare copper, in accordance with the applicable requirements of ASTM Designation B-3 and ASTM Designation B-8 and must be included in this item. Unless otherwise indicated, the wire must not be less than No. 8 AWG.

The ground wire must be interconnected to the ground rod, reinforcing steel and anchor bolts at each foundation. All connections to ground rods, structural steel and anchor bolts must be made with approved clamp. Where such connections are made to insulated conductors, the connection must be wrapped with at least 4 layers of electrical tape extended 6 inches onto the conductor insulation.

Method of Measurement. Ground rods will not be paid for separately. Ground wires and connection of ground rods at lighting units, manholes, handholes, controller foundations, and wall mounted controllers will be included in the cost of the item for which it is installed.

Basis of Payment. This work will not be paid for separately, but shall be included in the cost of the item for which it is installed.

REMOVE EXISTING CABLE

Description. This work will consist of cutting, disconnecting, removing and disposing of existing aerial cable attached to structure. The cable must be cut, disconnected from the cable support system on the structures, removed completely and disposed as specified herein, as shown on the plans and as directed by the Engineer.

The contractor shall coordinate and schedule the cable removal work with METRA prior to beginning any cable removal work.

No removal work shall be permitted without approval from the Engineer. All cables removed as part of this item shall become property of the Contractor and shall be removed from the site, unless otherwise directed.

Method of Measurement. The removed cable will be measured for payment in feet in place, regardless of cable type and size. Measurement will be made in a straight line between changes of direction and to the centers of poles, handholes, junction boxes and manholes. Slack cable and vertical cable will not be measured for payment. Multi-conductor cables included in a common support system such as a HENDRIX Cable Support System shall be measured the same as single conductor cables.

Basis of Payment. This work shall be paid for at the contract unit price for REMOVE EXISTING CABLE as specified. The price will be payment in full for completely removing and disposing of the existing aerial cable attached to structure.

MANHOLE, METRA SPECIAL

Description. This item consists of furnishing and installing or constructing a manhole with a frame and lid in the METRA Right-of-Way as shown on the plans, as required by METRA and as directed by the Engineer.

General Requirements. Work under this item shall be performed in accordance with Section 814 of the Standard Specifications and/or as required by METRA.

Method of Measurement. This item will be measured per each unit installed.

Basis of Payment. This work will be paid for at the contract unit price per each for MANHOLE, METRA SPECIAL, which will be payment in full for the material and work described herein. No additional payment will be allowed for excavation, backfilling, and restoration of the METRA Right-of-Way.

TELESCOPING STEEL SIGN SUPPORT (SPECIAL)

Description. This work shall consist of furnishing and installing telescoping steel sign supports for barrier wall or parapet mounted at locations shown on the plans and details in accordance with the applicable portions of Section 728 of the Standard Specifications except as otherwise specified on the plans.

Installation Methods. Installation methods shall be as specified in the plans.

Method of Measurement. This work will be measured for payment in feet (meters). The length measured will be the total length of all sections installed. All mounting hardware and appurtenances are included in the work and will not be measured separately for payment.

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for TELESCOPING STEEL SIGN SUPPORT (SPECIAL), which price shall include all equipment, materials and labor required to complete the installation the sign supports.

TELEVISION INSPECTION OF SEWER

Description. This work will consist of televising the storm sewer pipes before and after construction as specified in the contract drawings.

Requirements. The Contractor must furnish a videotape of a televised inspection of the interior of all existing storm sewers which may be impacted during construction under this contract. Record the videotape under the supervision of the Engineer. Perform two sessions of videotaping of the sewer: 1) before construction and 2) prior to the placement of final wearing surface.

The name, phone number, and contact person of the firm which will be performing the videotaping of the sewer must be provided by the Contractor at the pre-construction meeting.

Clean all sewers prior to videotaping before construction. The final acceptance of the sewer shall be based on the sewer videotape. All deficiencies exposed on the videotape must be corrected by the Contractor within 30 calendar days of notification. All costs incurred by the Contractor to make the required repairs are to be borne solely by the Contractor. The Contractor is required to re-videotape the sewer to verify that the deficiencies noted on any previous videotape have been corrected to the satisfaction of the Engineer. All costs to re-videotape the sewer, regardless of the number of times required, will be borne solely by the Contractor.

Every effort is to be made by the Contractor to correct all deficiencies prior to the placement of the final wearing surface. If, in the opinion of the Engineer, the Contractor has delayed in submitting the videotape, the placement of the final wearing surface may be suspended. No time extension will be granted due to this suspension and the Engineer will be sole judge as to any delays.

Include location maps, legends and descriptions on all videotape submittals. 2 copies of each submittal are required.

Method of Measurement. This work will be measured for payment in sewer televising per foot for the videotaping of the sewer before construction and prior to placement of the final wearing surface.

Basis of Payment. This work will be paid for at the contract unit price per foot for the TELEVISION INSPECTION OF SEWER.

The cleaning of sewers prior to videotaping before construction shall be paid for as STORM SEWERS TO BE CLEANED, of the diameter specified.

UTILITY REMOVALS

Several utilities have been identified on the original bridge plans dated March 1965 below the existing SB I-55 structure (S.N. 016-1055) and the existing NB I-55 structure (S.N. 016-0036) within the vacated right-of-way of South Cottage Grove Avenue and South Calumet Avenue between 24th Street and 25th Street. These utilities have not been confirmed with field survey or utility locates, nor has the type of utility been verified, however, record plan information indicates that utility lines once existed beneath the surface. At the time of the original bridge construction, record plans indicate an abandoned 8” gas main, a 12” gas main and a 12” water main were located within South Cottage Grove Avenue right-of-way. These utilities do not appear on the utility atlases of the respective utility company and are assumed to have been removed, retired or abandoned in-place.

Prior to construction of the proposed SB I-55 Retaining Wall (S.N. 016-0741) and the reconstruction of the existing manhole near Sta. 84+30, the Contractor shall coordinate with the utility companies including but not limited to Peoples Gas and the Chicago Department of Water Management to verify the existence of the retired or abandoned gas and/or water main. EXPLORATION TRENCH, 72" has been included in the contract for constructing a trench for the purpose of locating the existing utilities within the construction limits of the proposed improvements.

If the existing utilities are located and it is determined that they will be in conflict with the proposed improvements, the Contractor at the direction of the Engineer shall remove them. The removal shall be paid for as WATER MAIN REMOVAL or REMOVE ABANDONED GAS MAIN.

REMOVE ABANDONED GAS MAIN

Description. This work shall consist of the excavation, removal, satisfactory disposal, plugging and backfilling of the existing abandoned gas main at locations as shown on the Plans or as directed by the Engineer.

Construction Requirements:

Prior to any utility removal, the Contractor shall verify with the respective utility company that the subject utility structure is no longer in service. The abandoned gas main shall be removed within the limits where it conflicts with the proposed improvements, and as directed by the Engineer. The abandoned gas main that has been determined to not be affected by the proposed improvements may remain abandoned in-place. All pipes to be abandoned under this item shall have all openings sealed with a one (1) foot minimum length concrete plug.

Backfilling for Utility Removals:

Suitable excavated material from the utility removal excavation trench shall be used as backfill for the voids created by the same excavation. Excavated material from utility removal will not be allowed as backfill or embankment at other locations on the project site. Backfilling the void left by the removal operation shall be included in the cost of the item.

Method of Measurement. This work will be measured for payment in feet along the centerline of the abandoned gas main.

Basis of Payment. This work will be paid for at the contract unit price per foot for REMOVE ABANDONED GAS MAIN, which price shall include materials, equipment and labor to complete the work as described and includes excavation, removal and proper disposal of the existing abandoned gas main, plugging the ends of the sections of pipe to remain in-place and backfilling.

SLOTTED DRAIN REMOVAL

Description. This work shall consist of completely removing existing slotted drains in accordance with applicable portions of Section 551 of the Standard Specifications at locations designated on the plans or as directed by the Engineer. The void that results from the removal operation is to be backfilled with trench backfill to the elevation of bottom of proposed subgrade in areas of the proposed improvement and areas where the edge of the excavation is within two feet of the proposed edge of pavement, curb, gutter, curb and gutter, or stabilized shoulder.

Method of Measurement. This work will be measured for payment in feet along the centerline of the drain.

Basis of Payment. This work will be paid for at the contract unit price per foot for SLOTTED DRAIN REMOVAL, which price shall include materials and labor for removing and disposing of the existing structure, grates, couplings, fittings, encasement concrete, and surplus excavated materials.

TRENCH BACKFILL will be paid for in accordance with Article 208.04 of the Standard Specifications.

STORM SEWERS, TYPE 2, DUCTILE IRON PIPE

Description. Work under this item shall be performed according to Section 550 of the IDOT Standard Specifications and the current City of Chicago Department of Water Management (CDWM) Regulations for Sewer Construction and Stormwater Management and CDWM Standard Specifications for Water and Sewer Main Construction, except as herein modified.

This work shall consist of constructing storm sewers at locations designated by the Engineer, including any dewatering, sheeting and/or shoring required to perform the work as specified.

Construction Requirements. Where a storm sewer or drain connection is made to an existing sewer, a “T” or “Y” saddle shall be installed. The circular opening in the existing storm sewer must be core drilled to the same size as the external diameter of the proposed storm sewer or drain connection. The protrusion of the proposed sewer into the existing sewer must not exceed a maximum of 1 inch. Edge of core holes must be a minimum of 1.5 feet from the edge of pipe and a minimum distance of 5 feet horizontally between holes. Do not drill holes higher than 10 and 2 o’clock.

Where a storm sewer or drain connection is to be made to an existing lateral sewer, a concrete collar shall be used for the connection as shown on the plans.

QA/QC Requirements.

The Contractor must provide a Manufacturer's written certification that the materials comply with these specifications. All sewers and sewer structures must be inspected prior to the final payment to the Contractor.

Method of Measurement. This work will be measured for payment in place per foot.

Basis of Payment. This work will be paid for at the contract unit price per foot for the STORM SEWERS, TYPE 2, DUCTILE IRON PIPE, and DIAMETER specified.

STORM SEWERS TO BE CLEANED

Description. All existing storm sewers shall be considered as sewers insofar as the interpretation of this Special Provision is concerned. When specified for payment, the location of sewer to be cleaned will be shown on the plans.

All existing drainage structures which are to be adjusted or reconstructed shall be cleaned according to Article 602.15 of the Standard Specifications. This work will be paid for in accordance with Article 602.16 of the Standard Specifications.

All existing sewers which are specified to be cleaned on the plans will be cleaned according to Article 602.15.

Method of Measurement. This work will be measured for payment in feet for the length of sewer to be cleaned.

Basis of Payment. This work will be paid for at the contract unit price per foot for STORM SEWERS TO BE CLEANED, of the diameter specified.

CATCH BASINS TO BE RECONSTRUCTED
MANHOLES TO BE RECONSTRUCTED

Description. Work under this item shall be performed according to Section 602 of the Standard Specifications, except as herein modified.

This work shall consist of reconstructing existing catch basins and manholes to allow for proposed storm sewer pipe connections as shown on the Plans. The circular opening size shall be equal to the outside diameter of the pipe plus 1 to inches maximum as required to install the new pipes into the existing drainage structures (catch basins and/or manholes). The space between the pipe and the drainage structure must be sealed with grout for a watertight seal.

The contractor must take extra care and precaution not to damage portion of the drainage structure that is not affected by this work. Where necessary, or where the existing drainage structure is damaged by the Contractor, or where directed by the Engineer in the field, this work shall consist of removing and disposing of the upper portions of the existing structures including but not limited to frames and grates, frames lids, cones, and flat slab tops with the existing structures reconstructed to allow for the new pipe connection.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for CATCH BASINS TO BE RECONSTRUCTED and MANHOLES TO BE RECONSTRUCTED which price shall include all labor, excavation, backfilling, materials, and equipment necessary to remove and dispose of the upper portions of existing structures including but not limited to frames and grates, frames and lids, cones and flat slab tops (if necessary), and to modify the drainage structure to allow for the new pipe connection.

ABANDON AND FILL EXISTING STORM SEWER

Description. This work shall consist of filling abandoned storm sewer pipes at locations shown on the Plans and as directed by the Engineer. All storm sewer pipes to be abandoned in place shall be completely filled with Controlled Low Strength Material (CLSM), per Section 593 of the Standard Specifications. The ends of the storm sewer pipe shall be sealed with cement bricks and mortar, a poured concrete plug, or other means approved by the Engineer.

Basis of Payment. This work will be measured and paid for at the contract unit price per foot for ABANDON AND FILL EXISTING STORM SEWER. This price shall include all costs for providing and injecting CLSM, capping and other labor, equipment, and materials necessary to abandon and fill the pipe in accordance with the specifications.

DRAINAGE & UTILITY STRUCTURES TO BE RECONSTRUCTED (SPECIAL)

Description. Work under this item shall be performed according to Section 602 of the Standard Specifications, except as herein modified.

This work shall consist of reconstructing the existing drainage structure to allow for proposed storm sewer pipe connections as shown on the Plans. The circular opening in the existing drainage and utility structure must be core drilled. Opening size shall be equal to the outside diameter of the pipe plus 1 to 2 inches maximum as required to install the new pipes into the existing drainage & utility structures. The protrusion of the proposed sewer into the existing drainage and utility structures must not exceed a maximum of 1 inch. The space between the pipe and the drainage structure must be sealed with a non-shrink, non-metallic grout for a watertight seal.

If core drilling of the existing drainage structure is not possible, then the Contractor may saw cut an opening so as to not damage the remaining structure. The opening must not be overcut. The pipe opening in the wall must be fully sealed with concrete placed monolithic with a concrete collar on the outside of the wall for a watertight seal after the pipe has been installed. The concrete on the inside surface of the wall must be finished flush with the inner surfaces of the wall. On the outside of the wall, the concrete collar must be placed around the entire perimeter of the pipe and must cover the entire opening. The concrete collar must be a minimum of 12" thick and reinforced with #5@ 12" hooked bars on all 4 sides both vertically and horizontally.

Contractor must take extra care and precaution not to damage portion of existing drainage and utility structure that is not to be affected by this work. Where necessary, or where existing drainage & utility structure is damaged by Contractor, or where directed by Engineer in the field, this work shall also consist of removing and disposing of the upper portions of existing structures (manholes and catch basins) including but not limited to frames and grates, frames and lids, cones, and flat slab tops with the existing drainage & utility structures reconstructed to allow for the new pipe connection.

Submittals. The Contractor shall submit shop drawings for the proposed pipe connection and core drilling into the existing structure to be reconstructed to the Engineer for review and approval.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for DRAINAGE & UTILITY STRUCTURES TO BE RECONSTRUCTED (SPECIAL) which price shall include all labor, excavation, backfilling, materials, and equipment necessary to core drill the existing drainage structure, install the pipe into the existing structure, placing a watertight seal at the pipe connection including grout and/or concrete collars, removal and disposal of any upper portions of the existing structures including but not limited to frames and grates, frames and lids, and cones (if necessary), and to modify the manhole and /or riser to allow for the new pipe connection.

DRAINAGE STRUCTURE RECONSTRUCTION (SPECIAL)

Description. Work under this item shall be performed according to Section 602 of the Standard Specifications, except as herein modified.

This work shall consist of removing and disposing of the upper portions of existing manholes and catch basins including but not limited to frames and grates, frames and lids, cones, and flat slab tops. The existing manhole structure will then be reconstructed to match the proposed grade elevation as shown on the plans to the finished grade of the lightweight cellular concrete fill material.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for DRAINAGE STRUCTURE RECONSTRUCTION (SPECIAL) which price shall include all labor, excavation, backfilling, materials, and equipment necessary to remove and dispose of the upper portions of existing structures including but not limited to frames and grates, frames and lids, cones, and flat slab tops and reconstructing the manhole structure to top of finished grade as shown on the plans.

FILLING CATCH BASINS, SPECIAL

Description. Work under this item shall be performed according to Section 605 of the Standard Specifications, except as herein modified.

This work shall consist of filling in of the upper portions of existing catch basins including but not limited to frames and grates, frames and lids, cones, and flat slab tops and then placing a steel plate over the drainage structure as shown on the Plans. All inlet and/or outlet pipe connections located below the concrete slab shall be maintained after construction. After the steel plate has been placed, the existing structure shall be buried by lightweight cellular concrete fill.

Submittals. The Contractor shall submit details and calculations, prepared and sealed by an Illinois licensed structural engineer, of the steel plate support system he/she proposes to use for approval of the Engineer prior to ordering of material and implementation. Such approval will not relieve the Contractor of responsibility for the safety of the structure.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for FILLING CATCH BASINS, SPECIAL which price shall include all labor, excavation, backfilling, materials, and equipment necessary to remove and dispose of the upper portions of existing structures including but not limited to frames and grates, frames and lids, cones, and flat slab tops and placing a steel plate over the drainage structure and backfilling of the structure.

CATCH BASINS (CITY OF CHICAGO)

Description. Work under this item shall be performed according to Sections 602 and 604 of the IDOT Standard Specifications for Road and Bridge Construction and the current City of Chicago Department of Water Management Standard Specifications for Water and Sewer Main Construction, except as herein modified.

Materials. Materials shall be according to the following:

(a) Coarse aggregate for bedding material shall meet a CA 11 gradation in accordance with Article 1004.05 of the IDOT Standard Specifications.
(b) Fine aggregate for backfilling material shall meet FA 6 gradation in accordance with Article 1003.04 of the IDOT Standard Specifications.
(c) City of Chicago standard frame and lid shall meet be in accordance with the City of Chicago Department Management Standard Specifications for Water and Sewer Main Construction.

General Requirements. An ADA compliant open lid shall be placed on all catch basins located within the cross walk or as directed by the Engineer.

The City of Chicago Department of Water Management's (DOWM) Rain Blocker Restrictor Program shall be maintained with any roadway improvement. The restrictors shall be installed in all catch basins outside of the Central Business District. Restrictors must not be installed in catch basins in close proximity to viaduct areas, bus stops, or emergency entrances. The City of Chicago Department of Water Management (DOWM) must approve the non-installation or removal of any restrictor. The restrictors can be obtained from City of Chicago Department of Water Management Central District at 3901 S. Ashland Avenue. The Contractor should arrange for pick up by contacting 312-747-1177 (7am to 3pm, Monday to Friday). The furnishing and installing of a restrictor shall be included in the contract unit price for catch basins.

Requirements for restrictor installation are as follows:

- Arterial Streets: 3-inch Orifice Restrictor
- Bus Routes: 3-inch Orifice Restrictor
- Residential Streets: 3-inch Vortex Restrictor
- Alleys: 3-inch Orifice Restrictor in the last catch basin

When using an orifice restrictor, insert it into the half-trap. Upon tightening of the center nut on the face of the restrictor, the rubber O-rings will expand inside the half trap providing a water-tight seal. Pull on the restrictor to verify a tight fit is made.

When applying a vortex restrictor, insert it with the opening down. Upon tightening of the 2 bolts on the face of the restrictor, the rubber O-rings will provide a water-tight seal.
Pull on the restrictor to verify a tight fit is made.

QC/QA Requirements. All precast structures shall be from an IDOT approved source.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for CATCH BASINS, of the type, diameter specified, type of frame and grate or type of frame and lid specified (CITY OF CHICAGO).

INLETS (CITY OF CHICAGO)

Description. Work under this item shall be performed according to Sections 602 and 604 of the IDOT Standard Specifications for Road and Bridge Construction and the current City of Chicago Department of Water Management Standard Specifications for Water and Sewer Main Construction, except as herein modified.

Materials. Materials shall be according to the following:

(d) Coarse aggregate for bedding material shall meet a CA 11 gradation in accordance with Article 1004.05 of the IDOT Standard Specifications.
(e) Fine aggregate for backfilling material shall meet FA 6 gradation in accordance with Article 1003.04 of the IDOT Standard Specifications.
(f) City of Chicago standard frame and lid shall meet be in accordance with the City of Chicago Department Management Standard Specifications for Water and Sewer Main Construction.

General Requirements. An ADA compliant open lid shall be placed on all inlets located within the cross walk or as directed by the Engineer.

QC/QA Requirements. All precast structures shall be from an IDOT approved source.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid for at the contract unit price per each for INLETS, of the type, diameter specified, type of frame and grate or type of frame and lid specified (CITY OF CHICAGO).

MANHOLES, TYPE A, 8' – DIAMETER, WITH 2 TYPE 1 FRAMES, CLOSED LID, RESTRICTOR PLATE

Description. This work shall consist of constructing a 8' Diameter Type A manhole with restrictor plate in accordance with Sections 602 and 1006 of the Standard Specifications and as shown on the Contract Plans, and/or as directed by the Engineer.

Construction Requirements. Construction shall conform to the details in the Plans, all applicable IDOT Standard Drawings, and all applicable portions of Sections 602 and 1006 of the Standard Specifications.

Method of Measurement. This work will be measured for payment as each.

Basis of Payment. This work will be paid at the contract unit price for MANHOLES, TYPE A, 8'-DIAMETER, WITH 2 TYPE 1 FRAMES, CLOSED LID, RESTRICTOR PLATE. Price shall include but not be limited to all frames, grates, lids, sand cushion, steps, 8" concrete wall, all excavation and backfilling, and all other labor, materials and equipment needed to perform the work as specified herein.

GENERAL ELECTRICAL REQUIREMENTS
Effective: January 1, 2012

Add the following to Article 801 of the Standard Specifications:

"Maintenance transfer and Preconstruction Inspection:

General. Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall request a maintenance transfer and preconstruction site inspection, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting and/or traffic control systems which may be affected by the work. The request for the maintenance transfer and preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date. The maintenance transfer and preconstruction inspection shall:

Establish the procedures for formal transfer of maintenance responsibility required for the construction period.

Establish the approximate location and operating condition of lighting and/or traffic control systems which may be affected by the work

Marking of Existing Cable Systems. The party responsible for maintenance of any existing lighting and/or traffic control systems at the project site will, at the Contractor's request, mark and/or stake, once per location, all underground cable routes owned or maintained by the State. A project may involve multiple "locations" where separated electrical systems are involved (i.e. different controllers). The markings shall be taken to have a horizontal tolerance of at least 304.8 mm (one (1) foot) to either side.. The request for the cable locations and marking shall be made at the same time the request for the maintenance transfer and preconstruction inspection is made. The Contractor shall exercise extreme caution where existing buried cable runs are involved. The markings of existing systems are made strictly for assistance to the Contractor and this does not relieve the Contractor of responsibility for the repair or replacement of any cable run damaged in the course of his work, as specified elsewhere herein. Note that the contractor shall be entitled to only one request for location marking of existing systems and that multiple requests may only be honored at the contractor's expense. No locates will be made after maintenance is transferred, unless it is at the contractor's expense.

Condition of Existing Systems. The Contractor shall conduct an inventory of all existing electrical system equipment within the project limits, which may be affected by the work, making note of any parts which are found broken or missing, defective or malfunctioning. Megger and load readings shall be taken for all existing circuits which will remain in place or be modified. If a circuit is to be taken out in its entirety, then readings do not have to be taken. The inventory and test data shall be reviewed with and approved by the Engineer and a record of the inventory shall be submitted to the Engineer for the record. Without such a record, all systems transferred to the Contractor for maintenance during construction shall be returned at the end of construction in complete, fully operating condition."

Add the following to the 1st paragraph of Article 801.05(a) of the Standard Specifications:

"Items from multiple disciplines shall not be combined on a single submittal and transmittal. Items for lighting, signals, surveillance and CCTV must be in separate submittals since they may be reviewed by various personnel in various locations."

Revise the second sentence of the 5th paragraph of Article 801.05(a) of the Standard Specifications to read:

"The Engineer will stamp the submittals indicating their status as 'Approved', 'Approved as Noted', 'Disapproved', or 'Information Only'.

Revise the 6th paragraph of Article 801.05(a) of the Standard Specifications to read:

"Resubmittals. All submitted items reviewed and marked 'Approved as Noted', or 'Disapproved' are to be resubmitted in their entirety with a disposition of previous comments to verify contract compliance at no additional cost to the state unless otherwise indicated within the submittal comments."

Revise Article 801.11(a) of the Standard Specifications to read:

"Lighting Operation and Maintenance Responsibility. The scope of work shall include the assumption of responsibility for the continuing operation and maintenance the of existing, proposed, temporary, sign and navigation lighting, or other lighting systems and all appurtenances affected by the work as specified elsewhere herein. Maintenance of lighting systems is specified elsewhere and will be paid for separately

Energy and Demand Charges. The payment of basic energy and demand charges by the electric utility for existing lighting which remains in service will continue as a responsibility of the Owner, unless otherwise indicated. Unless otherwise indicated or required by the Engineer duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously at the Owner's expense and lighting systems shall not be kept in operation during long daytime periods at the Owner's expense. Upon written authorization from the Engineer to place a proposed new lighting system in service, whether the system has passed final acceptance or not, (such as to allow temporary lighting to be removed), the Owner will accept responsibility for energy and demand charges for such lighting, effective the date of authorization. All other energy and demand payments to the utility shall be the responsibility of the Contractor until final acceptance."

Add the following to Section 801 of the Standard Specifications:

"Lighting Cable Identification. Each wire installed shall be identified with its complete circuit number at each termination, splice, junction box or other location where the wire is accessible."

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

Revise the 2nd paragraph of Article 801.16 of the Standard Specifications to read:

"When the work is complete, and seven days before the request for a final inspection, the full-size set of contract drawings. Stamped "RECORD DRAWINGS", shall be submitted to the Engineer for review and approval and shall be stamped with the date and the signature of the Contractor's supervising Engineer or electrician. The record drawings shall be submitted in PDF format on CDROM as well as hardcopy for review and approval. In addition to the record drawings, copies of the final catalog cuts which have been Approved or Approved as Noted shall be submitted in PDF format along with the record drawings. The PDF files shall clearly indicate either by filename or PDF table of contents the respective pay item number. Specific part or model numbers of items which have been selected shall be clearly visible."

Add the following to Article 801.16 of the Standard Specifications:

"In addition to the specified record drawings, the Contactor shall record GPS coordinates of the following electrical components being installed, modified or being affected in other ways by this contract:

- Last light pole on each circuit
- Handholes
- Conduit roadway crossings
- Controllers
- Control Buildings
- Structures with electrical connections, i.e. DMS, lighted signs.
- Electric Service locations
- CCTV Camera installations
- Fiber Optic Splice Locations

Datum to be used shall be North American 1983.

Data shall be provided electronically and in print form. The electronic format shall be compatible with MS Excel. Latitude and Longitude shall be in decimal degrees with a minimum of 6 decimal places. Each coordinate shall have the following information:

1. Description of item
2. Designation or approximate station if the item is undesignated
3. Latitude
4. Longitude

Examples:

Equipment Description	Equipment Designation	Latitude	Longitude
CCTV Camera pole	ST42	41.580493	-87.793378
FO mainline splice handhole	HHL-ST31	41.558532	-87.792571
Handhole	HH at STA 234+35	41.765532	-87.543571
Electric Service	Elec Srv	41.602248	-87.794053
Conduit crossing	SB IL83 to EB I290 ramp SIDE A	41.584593	-87.793378
Conduit crossing	SB IL83 to EB I290 ramp SIDE B	41.584600	-87.793432
Light Pole	DA03	41.558532	-87.792571
Lighting Controller	X	41.651848	-87.762053
Sign Structure	FGD	41.580493	-87.793378
Video Collection Point	VCP-IK	41.558532	-87.789771
Fiber splice connection	Toll Plaza34	41.606928	-87.794053

Prior to the collection of data, the contractor shall provide a sample data collection of at least six data points of known locations to be reviewed and verified by the Engineer to be accurate within 100 feet. Upon verification, data collection can begin. Data collection can be made as construction progresses, or can be collected after all items are installed. If the data is unacceptable the contractor shall make corrections to the data collection equipment and or process and submit the data for review and approval as specified.

Accuracy. Data collected is to be mapping grade. A handheld mapping grade GPS device shall be used for the data collection. The receiver shall support differential correction and data shall have a minimum 5 meter accuracy after post processing.

GPS receivers integrated into cellular communication devices, recreational and automotive GPS devices are not acceptable.

The GPS shall be the product of an established major GPS manufacturer having been in the business for a minimum of 6 years."

ELECTRIC UTILITY SERVICE CONNECTION
Effective: January 1, 2012

Description. This item shall consist of payment for work performed by COMED in providing or modifying electric service as indicated. THIS MAY INVOLVE WORK AT MORE THAN ONE ELECTRIC SERVICE. For summary of the Electrical Service Drop Locations see the schedule contained elsewhere herein.

Electric Service Drop Location Schedule:

- At the new COMED pad mounted transformer located in the McCormick Place Busway Parking Lot just south of the McCormick Place South Building approximately 350 feet east of MLK Drive as shown on the Plans.

- At a new COMED utility service pole located in the alleyway approximately 70 feet east of MLK Drive and approximately 190 feet south of 25th Street as shown on the Plans.

CONSTRUCTION REQUIREMENTS

General. It shall be the Contractor's responsibility to contact COMED. The Contractor shall coordinate his work fully with the COMED both as to the work required and the timing of the installation. No additional compensation will be granted under this or any other item for extra work caused by failure to meet this requirement. **Please contact COMED, New Business Center Call Center, at 866 NEW ELECTRIC (1-866-639-3532) to begin the service connection process. The Call Center Representatives will create a work order for the service connection. The representative will ask the requestor for information specific to the request. The representative will assign the request based upon the location of project.**

The Contractor should make particular note of the need for the earliest attention to arrangements with COMED for service. In the event of delay by COMED, no extension of time will be considered applicable for the delay unless the Contractor can produce written evidence of a request for electric service within 30 days of execution.

Method Of Payment. The Contractor will be reimbursed to the exact amount of money as billed by COMED for its services. Work provided by the Contractor for electric service will be paid separately as described under ELECTRIC SERVICE INSTALLATION. No extra compensation shall be paid to the Contractor for any incidental materials and labor required to fulfill the requirements as shown on the plans and specified herein.

For bidding purposes, this item shall be estimated as $50,000.00

Basis Of Payment. This work will be paid for at the contract lump sum price for ELECTRIC UTILITY SERVICE CONNECTION which shall be reimbursement in full for electric utility service charges.

Designers Note: The estimate of cost of service connections for bidding purposes shall be provided by the Designer or Design Consultant.

ELECTRIC SERVICE INSTALLATION
Effective: January 1, 2012

Description. This item shall consist of all material and labor required to extend, connect or modify the electric services, as indicated or specified, which is over and above the work performed by the utility. Unless otherwise indicated, the cost for the utility work, if any, will be reimbursed to the Contractor separately under ELECTRIC UTILITY SERVICE CONNECTION. This item may apply to the work at more than one service location and each will be paid separately.

Materials. Materials shall be in accordance with the Standard Specifications.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall ascertain the work being provided by the electric utility and shall provide all additional material and work not included by other contract pay items required to complete the electric service work in complete compliance with the requirements of the utility.

No additional compensation will be allowed for work required for the electric service, even though not explicitly shown on the Drawings or specified herein

Method Of Measurement. Electric Service Installation shall be counted, each.

Basis Of Payment. This work will be paid for at the contract unit price each for ELECTRIC SERVICE INSTALLATION which shall be payment in full for the work specified herein.

UNDERPASS LUMINAIRE, HPS, STAINLESS STEEL HOUSING
Effective: January 1, 2012

Description. This item shall consist of furnishing, testing as required, and installing a luminaire suitable for roadway underpasses as specified herein.

General. The luminaire shall be optically sealed, mechanically strong and easy to maintain.

All wiring within the fixture shall have a minimum temperature rating of 125º C. In addition, the unit shall be designed to allow for a maximum supply wire rating of 90º C.

All hardware of the housing, reflector, and ballast assembly shall be captive.

The luminaire shall be UL Listed for Wet Locations.

The underpass luminaire shall be suitable for lighting a roadway underpass at approximate mounting height of 16 feet from a position suspended directly above the roadway.

The luminaire shall be certified by the U.L. testing laboratory to meet the IP66 criteria of the International Electro technical Commission Standard 529.

Housing. The housing shall be stainless steel and be made of 16 gauge minimum thickness stainless steel, Type 304, #2B finish.

Since the installed location of the luminaires has severe space limitations that prohibit servicing the luminaire from the top or side of the fixture, the luminaire must be serviceable from the bottom of the housing when in the installed position. Both ballast and optical compartments must be serviceable from the bottom of the fixture. Fixtures which open from the top or sides are not acceptable.

The housing shall have a maximum width of 13”

All internal and external hardware, unless specifically specified otherwise, shall be made of stainless steel.

Stainless Steel Housing

The stainless steel housing, and lens frame shall be made of 16 gauge minimum thickness stainless steel, Type 304 #2B.

All housing and frame components shall be cut within with a laser with a positioning accuracy of +/- .004" for assembly accuracy and machine welded to minimize irregularities in the weld joint.

All seams in the housing enclosure shall be welded by continuous welding. Stainless steel weld wire shall be used for all welds. A sample weld shall be submitted for review and approval.

The luminaire lens shall be flush, within 3.1 mm (0.122"), of the lens frame.

The lens frame shall be flat and the frame and luminaire housing shall not have any protruding flanges.

The lens frame assembly shall consist of a one-piece 16 gauge 304 stainless steel external frame with the lens facing toward the housing and a 16 gauge 304 stainless internal frame with the legs facing away from the housing. The internal frame shall have seam welded corners for added strength. The two panels will sandwich the glass lens and be fastened together with the use of no less than 10 #10 stainless steel fasteners.

The lens frame and the door frame shall each be secured through the use of two stainless steel draw latches secured to the fixture housing.

When in open position, it shall be possible to un-hinge and remove the lens frame for maintenance. The lens frame hinge shall be stainless steel and designed so that there must be a conscious action of the maintenance personnel to remove the lens frame. The frame hinging method shall not be designed so that bumping the frame accidentally could allow the frame to fall to the roadway surface. The removal method must be accomplished without the use of tools or hardware. The hinge pin shall be a minimum of 6.35 mm (0.250") in diameter. The pin shall be spring loaded and retractable with a safety catch to hold the pin in the retracted position for ease of maintenance.

The suspended housing shall be divided into two compartments, one for the ballast and optical assembly, the other for wire connections. The optical chamber shall be sealed from the environment. The wire portal between compartments shall be sealed so as to prevent air exchange through the portal. There shall be an internally mounted breather mechanism to allow internal and external air pressure to equalize without permitting dust or water into the unit.

The ballast and all electrical equipment shall be mounted to a removable aluminum chassis with a minimum thickness of 3.175, (0.125”). The chassis shall be held in place with captive stainless steel hardware. The hardware shall include a bracket that can be loosened and shifted to allow the chassis to pivot away from fastened position for removal. The splice box shall include a heavy-duty 3 pole terminal block to accommodate #6 conductors and a KTK 2 amp fuse with HPC fuse holder or approved equal. Quick-connect power distribution terminal blocks shall be a molded thermoset plastic, rated 70A, 600V and hove 3 poles, each with (4) .250 quick connect terminals. Operating temperature rating to be 150º C. Input wire size shall accommodate #2-#14 AWG. Torque rating shall be 45 in./lb. Maximum. Agency approvals shall be UL E62622; CSA LR15364.

Ballast compartment surfaces shall be deburred and free of sharp edges, points or corners that may come in contact with installers or service personnel.

Gasketing. The junction between the lens frame and the ballast housing door and the housing shall be sealed with a one-piece vulcanized or molded high temperature solid silicone rubber gasket with the equivalent of a 60 Shore A durometer rating. The gasket between the lens frame and the luminaire housing shall be securely attached by mechanical means, such a retaining lip to prevent the movement of the gasket. The gasket may not be secured by adhesive means exclusively. The lens and ballast housing doors shall be designed and constructed so they seal to the gasket on a flat surface. The frame shall not seal to the gasket using the edge of leg on a doorframe. The lens shall be sealed inside of the lens frame with the use of a one-piece solid silicone rubber gasket with ribbed flanges and a rating of 60 Shore A Durometer.

The junction between conduit connections to the luminaire and the lens frame junction to the housing shall withstand entry of water when subjected to a water jet pressure of 207 kPa (30 lbs. per sq. inch), tested under laboratory conditions. Submittal information shall include data relative to gasket thickness and density and the means of securing it in place.

Mounting Brackets. The brackets shall be properly sized to accommodate the weight of the luminaire with calculations or other suitable reference documentation submitted to support the material choice.

The luminaire shall have an opening in the housing for installation (by others) of a 28.1 mm (3/4 inch) diameter flexible conduit. The location of the opening will be determined by the Engineer during the shop drawing review.

Lamp Socket. The lamp socket shall be a 4KV pulse rated mogul type, porcelain glazed enclosed, and be provided with grips, or other suitable means to hold the lamp against vibration. The rating of the socket shall exceed the lamp starting voltage, or starting pulse voltage rating.

If the lamp socket is of the sealed removable type, proper alignment of the socket shall be provided and molded into the socket assembly and indicated in a contrasting color.

If the lamp socket is adjustable, the factory setting must be indicated legibly in the luminaire housing.

ANSI Identification Decal. A decal, complying to ANSI standard C136-15 for luminaire wattage and distribution type, shall be factory attached permanently to the luminaire. The information contained in the decal shall enable a viewer, from the ground level, to identify the lamp wattage and type of luminaire distribution.

Optical Assembly. Lens and Lens Frame. The lens shall be made of crystal clear, impact and heat resistant tempered glass a minimum of 6.35 mm (0.25") thick. The lens shall be held in such a manner as to allow for its expansion and contraction, due to temperature variation. The lens shall be a flat glass design.

Reflector. The reflector shall be hydro formed aluminum, 0.063" thick, bright-dip and clear anodized finish.

The reflector shall be secured with a stainless steel aircraft cable during maintenance operations.

If the reflector has multiple light distribution positions, each position must have positive stop/mounting with the original factory distribution identified.

The luminaire shall be photometrically efficient. Luminaire efficiency, defined by the I.E.S. as "the ratio or luminous flux (lumens) emitted by a luminaire to that emitted by the lamp or lamps used within", shall not be less than 67%. Submittal information shall include published efficiency data.

The reflector, the refractor or lens, and the entire optical assembly shall not develop any discoloration over the normal life span of the luminaire.

The reflector shall not be altered by paint or other opaque coatings which would cover or coat the reflecting surface. Control of the light distribution by any method other than the reflecting material and the aforementioned clear protective coating that will alter the reflective properties of the reflecting surface is unacceptable

Ballast. The ballast shall be a High Pressure Sodium, high power factor, lead type, Isolated Regulator Ballast (CWI) or a Constant Wattage Auto-regulator (CWA), for operation on a nominal 240 volt system.

The ballast shall be designed to furnish proper electrical characteristics for starting and operating a high pressure sodium vapor lamp of the specified rating at ambient temperatures of -29 degrees to +40 degrees C. The ballast windings shall be adequately impregnated and treated for protection against the entrance of moisture, insulated with Class H insulation, and able to withstand the NEMA standard dielectric test.

The ballast shall include an electronic starting assembly. The starter assembly shall be comprised of solid state devices capable of withstanding ambient temperatures of 85 degrees C. The starter shall provide timed pulsing with sufficient follow-through current to completely ionize and start all lamps. Minimum amplitude of the pulse shall be 2,500 volts, with a width of one (1) microsecond at 2,250 volts, and shall be applied within 20 electrical degrees of the peak of the open circuit voltage wave with a repetition rate as recommended by the lamp manufacturer for the 60 cycle wave. The lamp peak pulse current shall be a minimum of 0.2 amperes. Proper ignition shall be provided over a range of input voltage from 216 to 264 volts. The starter component shall be field replaceable and completely interchangeable with no adjustment necessary for proper operation. The starter component shall have push-on type electrical terminations to provide good electrical and mechanical integrity and ease of replacement. Terminal configuration shall preclude improper insertion of plug-in components. The starter circuit board shall be treated in an approved manner to provide a water and contaminant-resistant coating.

The ballast shall have an overall power factor of at least 0.9 when operated under rated lamp load.

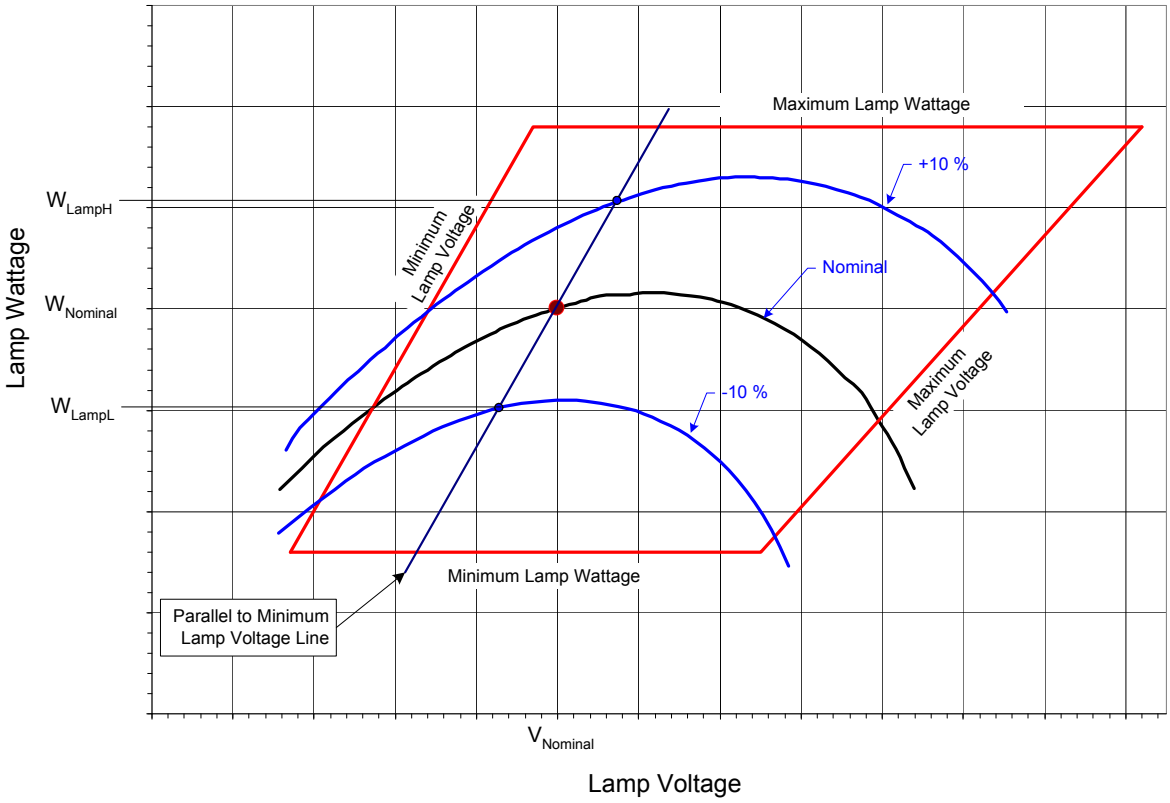
The ballast shall withstand a 2,500 volt dielectric test between the core and windings without damage to the insulation.

The ballast shall not subject the lamp to a crest factor exceeding 1.8 and shall operate the lamp without affecting adversely the lamp life and performance.

The ballast shall be designed to ANSI Standards and shall be designed and rated for operation on a nominal 240 volt system. The ballast shall provide positive lamp ignition at the input voltage of 216 volts. It shall operate the lamp over a range of input voltages from 216 to 264 volts without damage to the ballast. It shall provide lamp operation within lamp specifications for rated lamp life at input design voltage range. Operating characteristics shall produce output regulation not exceeding the following values:

Nominal Ballast Wattage	Maximum Ballast Regulation
400	25%
310	26%
250	22%
150	22%
70	17%

For this measure, regulation shall be defined as the ratio of the lamp watt difference between the upper and lower operating curves to the nominal lamp watts; with the lamp watt difference taken within the ANSI trapezoid at the nominal lamp operating voltage point parallel to the minimum lamp volt line:



$$\text{Ballast Regulation} = \frac{W_{LampH} - W_{LampL}}{W_{LampN}} \times 100$$

where:
W_{LampH} = lamp watts at +10% line voltage (264v)
W_{LampL} = lamp watts at - 10% line voltage (216v)
W_{lampN} = lamp watts at 240v"

Ballast losses, based on cold bench tests, shall not exceed the following values:

Nominal Ballast Wattage	Maximum Ballast Losses
400	16.0%
310	19.0%
250	17.5%
150	26.0%
70	34.0%

Ballast losses shall be calculated based on input watts and lamp watts at nominal system voltage as indicated in the following equation:

$$\text{Ballast Losses} = \frac{W_{Line} - W_{Lamp}}{W_{Lamp}} \times 100$$

where:
W_{line} = line watts at 240v
W_{lamp} = lamp watts at 240v

Ballast output to lamp. At nominal system voltage and a lamp voltage of 52v, the ballast shall deliver a lamp wattage within ±4% of the nominal lamp wattage. For a 70w luminaire, the ballast shall deliver 70 watts ±4% at a lamp voltage of 52v for the nominal system voltage of 240v.

Ballast output over lamp life. Over the life of the lamp the ballast shall produce an average of the nominal lamp rating ±5%. Lamp wattage readings shall be taken at 5-volt increments throughout the ballast trapezoid. The lamp wattage values shall then be averaged within the trapezoid and shall be within ±5% of the nominal ballast rating. Submittal documents shall include a tabulation of the lamp wattage vs. lamp voltage readings.

The ballast shall be integral to the luminaire. The ballast components shall be mounted on a removable door or on a removable mounting tray. The ballast tray or mounting door shall be manufactured with dissimilar metal conflicts kept to a minimum.

Ballast wiring and lamp socket wiring shall be connected by means of keyed plugs. Upon unplugging the ballast wiring the entire ballast assembly shall removable for maintenance. The plugs shall not be interchangeable to avoid improper connection of the assemblies.

The mounting adjustments and wiring terminals shall be readily accessible. The removable door or pad shall be secure when fastened in place and all individual components shall be secure upon the removable element. Upon ballast assembly removal, each component shall be readily removable for replacement.

The luminaire shall be completely wired. All wiring connections within the luminaire shall be made with insulated compression connectors or insulated terminal blocks. An insulated terminal block shall be provided to terminate the incoming supply wires. The terminal block shall be rated for 600 volts and shall accommodate wire sizes from #10 to #6 AWG. The use of “wire nuts” is unacceptable. A ground terminal shall be provided for the connection of a ground wire.

Ballast and lamp Leads shall not be smaller than #16 AWG conductors rated at a minimum temperature rating of 90º C.

All wires shall be coded by tagging and/or color coding for proper identification. A complete legible permanently attached wiring diagram (no smaller than 3" x 4" with a min. font size of 8 pts.) coordinated with the wire identifications shall be displayed at the convenient location on the interior of the luminaire. The wiring diagram shall be oriented so that it is right side up and readable when the luminaire is in the installed position.

The ballast shall not be excessively noisy. Noticeable noisy ballasts, as determined by the Engineer, shall be replaced at no additional cost to the State.

The ballast shall provide lamp operation within lamp specifications for the rated lamp life at the input design voltage range. It shall have a 6 month operation capability with a cycling lamp.

Submittal information shall include manufacturer's literature and date to confirm compliance with all specified requirements including an ANSI Standard Ballast Characteristic Graph (Trapezoid) diagram, with all items clearly identified.

Photometric Performance. The luminaire photometric performance shall produce results equal to or better than those listed in the included Luminaire Performance Table. Submittal information shall include computer calculations based on the controlling given conditions which demonstrate achievement of all listed performance requirements. The computer calculations shall be done according to I.E.S. recommendations and the submitted calculations shall include point-by-point illuminance, luminance and veiling luminance as well as listings of all indicated averages and ratios as applicable. Calculations shall be performed with AGI32. The program used to perform the calculations shall be identified on the submittal. The submittal data shall also include all photometric calculations files with the proposed photometric data on a CD ROM. The performance requirements shall define the minimum number of decimal places used in the calculations. Rounding of calculations shall not be allowed.

In addition to computer printouts of photometric performance, submittal information shall include: Descriptive literature; an Isofootcandle chart of horizontal lux (footcandles); Utilization curve; Isocandela diagram; Luminaire classification per ANSI designation; Candlepower values at every 2.5 degree intervals; Candlepower tables are to be provided on CD ROM in the IES format as specified in IES publication LM-63.

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE #1
5 Lane Cross Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	60 ft
	Number of Lanes	5
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	16 ft
	Mast Arm Length	0 ft
	Pole Set-Back From Edge of Pavement	2 ft
LUMINAIRE DATA	Lamp Type	HPS
	Lamp Lumens	9,500
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control Of Distribution	Cutoff
	I.E.S. Lateral Distribution	IV
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	35 ft
	Configuration	Opposite Side
	Luminaire Overhang over edge of pavement	-2 ft

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
ILLUMINATION	Ave. Horizontal Illumination, $\mathbf{E_{AVE}}$	18 Lux
	Uniformity Ratio, $\mathbf{E_{AVE}/E_{MIN}}$	2.5:1
LUMINANCE	Average Luminance, $\mathbf{L_{AVE}}$	1.2 Cd/m^2
	Uniformity Ratio, $\mathbf{L_{AVE}/L_{MIN}}$	2.5:1 (Max)
	Uniformity Ratio, $\mathbf{L_{MAX}/L_{MIN}}$	4:1 (Max)
	Veiling Luminance Ratio, $\mathbf{L_V/L_{AVE}}$	0.25:1 (Max)

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE #2
4 Lane Cross Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	48 ft
	Number of Lanes	4
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	16 ft
	Mast Arm Length	0 ft
	Pole Set-Back From Edge of Pavement	2 ft
LUMINAIRE DATA	Lamp Type	HPS
	Lamp Lumens	9,500
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control Of Distribution	Cutoff
	I.E.S. Lateral Distribution	IV
	Total Light Loss Factor	0.65
LAYOUT DATA	Spacing	35 ft
	Configuration	Opposite Side
	Luminaire Overhang over edge of pavement	-2 ft

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
ILLUMINATION	Ave. Horizontal Illumination, $\mathbf{E_{AVE}}$	18 Lux
	Uniformity Ratio, $\mathbf{E_{AVE}/E_{MIN}}$	2.5:1
LUMINANCE	Average Luminance, $\mathbf{L_{AVE}}$	1.2 Cd/m^2
	Uniformity Ratio, $\mathbf{L_{AVE}/L_{MIN}}$	2.5:1
	Uniformity Ratio, $\mathbf{L_{MAX}/L_{MIN}}$	4:1
	Veiling Luminance Ratio, $\mathbf{L_V/L_{AVE}}$	0.25:1

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

Independent Testing. Independent testing of luminaires shall be required whenever the quantity of luminaires of a given wattage and distribution, as indicated on the plans, is 50 or more. For each luminaire type to be so tested, one luminaire plus one luminaire for each 50 luminaires shall be tested. Example: *A plan quantity of 75 luminaires would dictate that 2 to be tested; 135 luminaires would dictate that three be tested*.

The Contractor shall be responsible for all costs associated with the specified testing, including but not limited to shipping, travel and lodging costs as well as the costs of the tests themselves, all as part of the bid unit price for this item. Travel, lodging and other associated costs for travel by the Engineer shall be direct-billed to or shall be pre-paid by the Contractor, requiring no direct reimbursement to the Engineer or the independent witness, as applicable.

Commitment to test. The Vendor shall select one of the following options for the required testing with the Engineer's approval:

Engineer Factory Selection for Independent Lab: The Contractor may select this option if the luminaire manufacturing facility is within the state of Illinois. The Contractor shall propose an independent test laboratory for approval by the Engineer. The selected luminaires shall be marked by the Engineer and shipped to the independent laboratory for tests.

Engineer Witness of Independent Lab Test: The Contractor may select this option if the independent testing laboratory is within the state of Illinois. The Engineer shall select, from the project luminaires at the manufacturer's facility or at the Contractor's storage facility, luminaires for testing by the independent laboratory.

Independent Witness of Manufacturer Testing: The independent witness shall select from the project luminaires at the manufacturer's facility or at the Contractor's storage facility, the luminaires for testing. The Contractor shall propose a qualified independent agent, familiar with the luminaire requirements and test procedures, for approval by the Engineer, to witness the required tests as performed by the luminaire manufacturer. The independent witness shall:

- Have been involved with roadway lighting design for at least 15 years.
- Not have been the employee of a luminaire or ballast manufacturer within the last 5 years.
- Be a member of IESNA in good standing.
- Provide a list of professional references.

Engineer Factory Selection and Witness of Manufacturer Testing: The Contractor may select this option if the manufacturing facility is within the state of Illinois. At the manufacturer's facility, the Engineer shall select the luminaires to be tested and shall be present during the testing process. The Contractor shall schedule travel by the Engineer to and from the Manufacturer's laboratory to witness the performance of the required tests.

In all cases, the selection of luminaires shall be a random selection from the entire completed lot of luminaires required for the contract. Selections from partial lots will not be allowed. The selection of the testing option shall be presented with the information submitted for approval. The proposed independent laboratory or independent witness shall be included with that information. The selection of the testing option shall be presented with the information submitted for approval. The proposed independent laboratory or independent witness shall be included with that information.

The testing performed shall include photometric, electrical, heat and water jet testing.

Photometric testing shall be in accordance with IES recommendations except that the selected luminaire(s) shall be tested as manufactured without any disassembly or modification and, as a minimum shall yield an isofootcandle chart, with max candela point and half candela trace indicated, an isocandela diagram, maximum plane and cone plots of candela, a candlepower table (house and street side), a coefficient of utilization chart, a luminous flux distribution table, and complete calculations based on specified requirements and tests.

Electrical testing shall conform to NEMA and ANSI standards and as a minimum, shall yield a complete check of wiring connections, a ballast dielectric test, total ballast losses in watts and percent of input, a lamp volt-watt trace, regulation data, a starter test, lamp current crest factor, power factor (minimum over the design range of input voltage at nominal lamp voltage) and, a table of ballast characteristics showing input amperes, watts and power factor, output volts, amperes, watts and lamp crest factor as well as ballast losses over the range of values required to produce the lamp volt-watt trace. Ballast test data shall also be provided in an electronic format acceptable to the Engineer to demonstrate compliance with sections 9.7, 9.8, 9.9 and 9.10.

Heat Testing. Heat testing shall be conducted to ensure that the luminaire complies with UL 1572 An ambient temperature of 40 degrees centigrade (104 degrees F) shall be used for the test.

Water spray test. The luminaires must pass the following water spray test.:

A spray apparatus consisting of four spray nozzles set at an angle of 30 degrees from the vertical plane space 30 inches apart on a 2 inch pipe, each delivering 12 gallons of water per minute at a minimum of 100 psi at each nozzle in a 90 degree cone. A water pressure gauge shall be installed at the first nozzle.

The luminaires shall be mounted in a ceiling configuration and with each nozzle set a distance of 18 inches below the fixture in the vertical plane and 18 inches away in the horizontal plane from the fixture lens, apply spray for a duration of 3 minutes at a minimum of 100 psi. When opened, the fixture shall not show any signs of leakage.

The above test shall be repeated in the opposite horizontal plane from the fixture lens with no signs of leakage.

The summary report and the test results shall be certified by the independent test laboratory or the independent witness, as applicable, and shall be sent by certified mail directly to the Engineer. A copy of this material shall be sent to the Contractor and luminaire manufacturer at the same time.

Should any of the tested luminaires of a given distribution type and wattage fail to satisfy the specifications and perform according to approved submittal information, the luminaire of that distribution type and wattage shall be unacceptable and be replaced by alternate equipment meeting the specifications with the submittal and testing process repeated in their entirety; or corrections made to achieve required performance. In the case of corrections, the Vendor shall advise the Engineer of corrections made and shall request a repeat of the specified testing and, if the corrections are deemed reasonable by the Engineer, the testing process shall be repeated. The number of luminaires to be tested shall be the same quantity as originally tested. Luminaires which are not modified or corrected shall not be re-tested without prior approval from the Engineer.

Coordination shall be the Vendor's responsibility. Failure to coordinate arrangements and notice shall not be grounds for additional compensation or extension of time.

Submittal information shall include a statement of intent to provide the testing as well as a request for approval of the chosen laboratory.

Installation. Underpass luminaires shall be either attached to structures (such as piers, etc.) or suspended from structures (such as bridge decks) as indicated or implied by the configuration on the Plans. Mounting, including all hardware and appurent items, shall be included as part of this item.

Unless otherwise indicated, suspended underpass luminaires shall be installed one-inch above the lowest underpass beam and shall be mounted using vibration dampening assemblies. All mounting hardware shall be corrosion resistant and shall be stainless steel unless otherwise indicated.

The Engineer reserves the right to select the final light distribution pattern, luminaire aiming angle and change it as deemed necessary to produce the proper pavement luminance.

Surface mounted luminaires, all luminaires not mounted on suspension rods, shall have one-inch thick stainless steel spacers installed between the luminaire and the deck or wall.

Guarantee. The Vendor shall provide a written guarantee for materials, and workmanship for a period of 6 months after final acceptable of the lighting system.

Documentation. All instruction sheets required to be furnished by the manufacturer for materials and supplies and for operation of the equipment shall be delivered to the Engineer.

The manufacturer shall have been incorporated for at least five years and shall have at least five years in the design and manufacturing of roadway underpass lighting. The manufacturer shall provide evidence of financial strength to finance the production of the project by submitting the name of at least three projects completed in the previous calendar year of greater than $250,000 each. All steel used in the project shall be certified to be provided domestically, and all fixture components used shall be manufactured domestically.

Method of Measurement. Luminaires shall be counted, each.

Basis of Payment. This item shall be paid at the contract unit price each for UNDERPASS LUMINAIRE, of the wattage specified, HIGH PRESSURE SODIUM VAPOR, which shall be payment in full for the material and work described herein.

MAINTENANCE OF LIGHTING SYSTEMS
Effective: January 1, 2012

Replace Article 801.11 and 801.12 of the Standard Specifications with the following:

Effective the date the Contractor's activities (electrical or otherwise) at the job site begin, the Contractor shall be responsible for the proper operation and maintenance of all existing and proposed lighting systems which are part of, or which may be affected by the work until final acceptance or as otherwise determined by the Engineer.

The Contractor shall be responsible for the proper operation and maintenance of the following existing and proposed lighting systems under this contract:

- Existing and proposed IDOT Lighting Controller ‘A’; All Circuits.
- Proposed Main Distribution Panel (MDP); all circuits, associated metering cabinet and power feed to the utility pole.

Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor shall initiate a request for a maintenance transfer and preconstruction inspection, as specified elsewhere herein, to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any lighting systems which may be affected by the work. The request for the maintenance preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date.

Existing lighting systems, when depicted on the plans, are intended only to indicate the general equipment installation of the systems involved and shall not be construed as an exact representation of the field conditions. It remains the Contractor's responsibility to visit the site to confirm and ascertain the exact condition of the electrical equipment and systems to be maintained.

Maintenance of Existing Lighting Systems

Existing lighting systems. Existing lighting systems shall be defined as any lighting system or part of a lighting system in service at the time of contract Letting. The contract drawings indicate the general extent of any existing lighting, but whether indicated or not, it remains the Contractor's responsibility to ascertain the extent of effort required for compliance with these specifications and failure to do so will not be justification for extra payment or reduced responsibilities.

Extent of Maintenance.

Partial Maintenance. Unless otherwise ‘indicated, if the number of circuits affected by the contract is equal to or less than 40% of the total number of circuits in a given controller and the controller is not part of the contract work, the Contractor needs only to maintain the affected circuits. The affected circuits shall be isolated by means of in-line waterproof fuse holders as specified elsewhere and as approved by the Engineer.

Full Maintenance. If the number of circuits affected by the contract is greater than 40% of the total number of circuits in a given controller, or if the controller is modified in any way under the contract work, the Contractor shall maintain the entire controller and all associated circuits.

Maintenance of Proposed Lighting Systems

Proposed Lighting Systems. Proposed lighting systems shall be defined as any lighting system or part of a lighting system, temporary or permanent, which is to be constructed under this contract.

The Contractor shall be fully responsible for maintenance of all items installed under this contract. Maintenance shall include, but not be limited to, any equipment failures or malfunctions as well as equipment damage either by the motoring public, Contractor operations, vandalism, or other means. The potential cost of replacing or repairing any malfunctioning, damaged, or vandalized equipment shall be included in the bid price of this item and will not be paid for separately.

Lighting System Maintenance Operations

The Contractor's responsibility shall include all applicable responsibilities of the Electrical Maintenance Contract, State of Illinois, Department of Transportation, Division of Highways, District One. These responsibilities shall include the maintenance of lighting units (including sign lighting), cable runs and lighting controls. In the case of a pole knockdown or sign light damage, the Contractor shall promptly clear the lighting unit and circuit discontinuity and restore the system to service. The equipment shall then be re-set by the contractor within the time limits specified herein.

If the equipment damaged by normal vehicular traffic, not contractor operations, is beyond repair and cannot be re-set, the contractor shall replace the equipment in kind with payment made for such equipment under Article 109.04. If the equipment damaged by any construction operations, not normal vehicular traffic, is beyond repair and cannot be re-set, the contractor shall replace the equipment in kind and the cost of the equipment shall be included in the cost of this pay item and shall not be paid for separately.

Responsibilities shall also include weekly night-time patrol of the lighting system, with patrol reports filed immediately with the Engineer and with deficiencies corrected within 24 hours of the patrol. Patrol reports shall be presented on standard forms as designated by the Engineer. Uncorrected deficiencies may be designated by the Engineer as necessitating emergency repairs as described elsewhere herein.

The following chart lists the maximum response, service restoration, and permanent repair time the Contractor will be allowed to perform corrective action on specific lighting system equipment.

INCIDENT OR PROBLEM	SERVICE RESPONSE TIME	SERVICE RESTORATION TIME	PERMANENT REPAIR TIME
Control cabinet out	1 hour	4 hours	7 Calendar days
Hanging mast arm	1 hour to clear	na	7 Calendar days
Radio problem	1 hour	4 hours	7 Calendar days
Motorist caused damage or leaning light pole 10 degrees or more	1 hour to clear	4 hours	7 Calendar days
Circuit out – Needs to reset breaker	1 hour	4 hours	na
Circuit out – Cable trouble	1 hour	24 hours	21 Calendar days
Outage of 3 or more successive lights	1 hour	4 hours	na
Outage of 75% of lights on one tower	1 hour	4 hours	na
Outage of light nearest RR crossing approach, Islands and gores	1 hour	4 hours	na
Outage (single or multiple) found on night outage survey or reported to EMC	na	na	7 Calendar days
Navigation light outage	na	na	24 hours

- **Service Response Time** -- amount of time from the initial notification to the Contractor until a patrolman physically arrives at the location.

- **Service Restoration Time** – amount of time from the initial notification to the Contractor until the time the system is fully operational again (In cases of motorist caused damage the undamaged portions of the system are operational.)

- **Permanent Repair Time** – amount of time from initial notification to the Contractor until the time permanent repairs are made if the Contractor was required to make temporary repairs to meet the service restoration requirement.

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 any monies owed to the Contractor. Repeated failures and/or a gross failure of maintenance shall result in the State's Electrical Maintenance Contractor being directed to correct all deficiencies and the resulting costs deducted from any monies owed the contractor.

Damage caused by the Contractor's operations shall be repaired at no additional cost to the Contract.

Operation of Lighting

The lighting shall be operational every night, dusk to dawn. Duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously. Lighting systems shall not be kept in operation during long daytime periods.

Method of Measurement. The contractor shall demonstrate to the satisfaction of the Engineer that the lighting system is fully operational prior to submitting a pay request. Failure to do so will be grounds for denying the pay request. Months in which the lighting systems are not maintained and not operational will not be paid for. Payment shall not be made retroactively for months in which lighting systems were not operational.

Basis of Payment. Maintenance of lighting systems shall be paid for at the contract unit price per calendar month for MAINTENANCE OF LIGHTING SYSTEM, which shall include all work as described herein.

LUMINAIRE
Effective: January 1, 2012

Add the following to first paragraph of Article 1067(c) of the Standard Specifications:

> "The reflector shall not be altered by paint or other opaque coatings which would cover or coat the reflecting surface. Control of the light distribution by any method other than the reflecting material and the aforementioned clear protective coating that will alter the reflective properties of the reflecting surface is unacceptable"

Add the following to Article 1067(f) of the Standard Specifications:

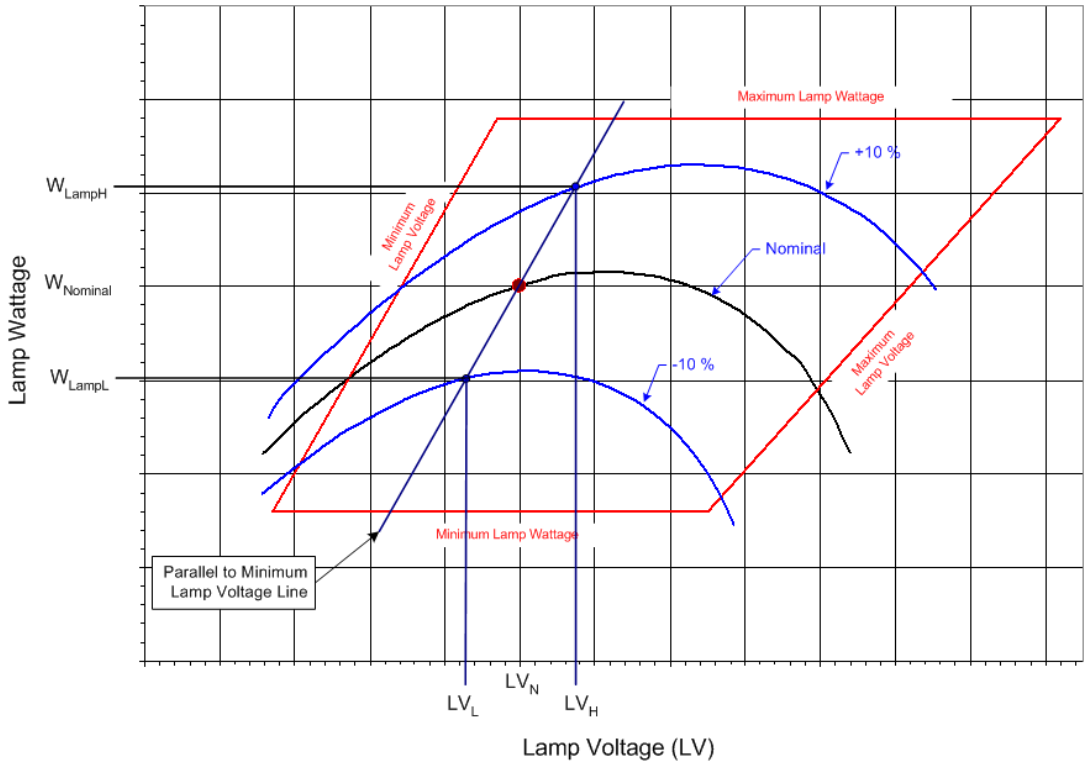
"The ballast shall be a High Pressure Sodium, high power factor, constant wattage auto-regulator, lead type (CWA) for operation on a nominal 240 volt system."

Revise Article 1067(f)(1) of the Standard Specifications to read:

"The high pressure sodium, auto-regulator, lead type (CWA) ballast shall be designed to ANSI Standards and shall be designed and rated for operation on a nominal 240 volt system. The ballast shall provide positive lamp ignition at the input voltage of 216 volts. It shall operate the lamp over a range of input voltages from 216 to 264 volts without damage to the ballast. It shall provide lamp operation within lamp specifications for rated lamp life at input design voltage range. Operating characteristics shall produce output regulation not exceeding the following values:

Nominal Ballast Wattage	Maximum Ballast Regulation
750	25%
400	26%
310	26%
250	26%
150	24%
70	18%

For this measure, regulation shall be defined as the ratio of the lamp watt difference between the upper and lower operating curves to the nominal lamp watts; with the lamp watt difference taken within the ANSI trapezoid at the nominal lamp operating voltage point parallel to the minimum lamp volt line:



$$\text{Ballast Regulation} = \frac{W_{LampH} - W_{LampL}}{W_{LampN}} \times 100$$

where:
W_{LampH} = lamp watts at +10% line voltage when Lamp voltage = LV_H
W_{LampL} = lamp watts at - 10% line voltage when lamp voltage = LV_L
W_{lampN} = lamp watts at nominal lamp operating voltage = LV_N

Wattage	Nominal Lamp Voltage, LV_N	LV_L	LV_H
750	120v	115v	125v
400	100v	95v	105v
310	100v	95v	105v
250	100v	95v	105v
150	55v	50v	60v
70	52v	47v	57v

Ballast losses, based on cold bench tests, shall not exceed the following values:

Nominal Ballast Wattage	Maximum Ballast Losses
750	15%
400	20%
310	21%
250	24%
150	26%
70	34%

Ballast losses shall be calculated based on input watts and lamp watts at nominal system voltage as indicated in the following equation:

$$\text{Ballast Losses} = \frac{W_{Line} - W_{Lamp}}{W_{Lamp}} \times 100$$

where:
W_{line} = line watts at nominal system voltage
W_{lamp} = lamp watts at nominal system voltage

Ballast output to lamp. At nominal system voltage and nominal lamp voltage, the ballast shall deliver lamp wattage with the variation specified in the following table.

Nominal Ballast Wattage	Output to lamp variation
750	± 7.5%
400	± 7.5%
310	± 7.5%
250	± 7.5%
150	± 7.5%
70	± 7.5%

Example: For a 400w luminaire, the ballast shall deliver 400 watts ±7.5% at a lamp voltage of 100v for the nominal system voltage of 240v which is the range of 370w to 430w.

Ballast output over lamp life. Over the life of the lamp the ballast shall produce average output wattage of the nominal lamp rating as specified in the following table. Lamp wattage readings shall be taken at 5-volt increments throughout the ballast trapezoid. Reading shall begin at the lamp voltage (L_V) specified in the table and continue at 5 volt increments until the right side of the trapezoid is reached. The lamp wattage values shall then be averaged and shall be within the specified value of the nominal ballast rating. Submittal documents shall include a tabulation of the lamp wattage vs. lamp voltage readings.

Nominal Ballast Wattage	LV Readings begin at	Maximum Wattage Variation
750	110v	± 7.5%
400	90v	± 7.5%
310	90v	± 7.5%
250	90v	± 7.5%
150	50v	± 7.5%
70	45v	± 7.5%

Example: For a 400w luminaire, the averaged lamp wattage reading shall not exceed the range of ±7.5% which is 370w to 430w"

Add the following to Article 1067(h) of the Standard Specifications:

"Independent Testing. Independent testing of luminaires shall be required whenever the pay item quantity of luminaires of a given pay item, as indicated on the plans, is 50 or more. For each luminaire type to be so tested, one luminaire plus one luminaire for each 50 luminaires shall be tested. Example: *A plan pay item quantity of 75 luminaires for a specific pay item would dictate that 2 be tested; 135 luminaires would dictate that three be tested*." If the luminaire performance table is missing from the contract documents, the luminaire(s) shall be tested and the test results shall be evaluated against the manufacturer's data as provided in the approved material submittal. The test luminaire(s) results shall be equal to or better than the published data. If the test results indicated performance not meeting the published data, the test luminaire will be designated as failed and corrective action as described herein shall be performed.

The Contractor shall be responsible for all costs associated with the specified testing, including but not limited to shipping, travel and lodging costs as well as the costs of the tests themselves, all as part of the bid unit price for this item. Travel, lodging and other associated costs for travel by the Engineer shall be direct-billed to or shall be pre-paid by the Contractor, requiring no direct reimbursement to the Engineer or the independent witness, as applicable"

The Contractor shall select one of the following options for the required testing with the Engineer's approval:

a. Engineer Factory Selection for Independent Lab: The Contractor may select this option if the luminaire manufacturing facility is within the state of Illinois. The Contractor shall propose an independent test laboratory for approval by the Engineer. The selected luminaires shall be marked by the Engineer and shipped to the independent laboratory for tests.

b. Engineer Witness of Independent Lab Test: The Contractor may select this option if the independent testing laboratory is within the state of Illinois. The Engineer shall select, from the project luminaires at the manufacturer's facility or at the Contractor's storage facility, luminaires for testing by the independent laboratory.

c. Independent Witness of Manufacturer Testing: The independent witness shall select from the project luminaires at the manufacturers facility or at the Contractor's storage facility, the luminaires for testing. The Contractor shall propose a qualified independent agent, familiar with the luminaire requirements and test procedures, for approval by the Engineer, to witness the required tests as performed by the luminaire manufacturer.

   The independent witness shall as a minimum meet the following requirements:

   - Have been involved with roadway lighting design for at least 15 years.
   - Not have been the employee of a luminaire or ballast manufacturer within the last 5 years.
   - Not associated in any way (plan preparation, construction or supply) with the particular project being tested.
   - Be a member of IESNA in good standing.
   - Provide a list of professional references.

   This list is not an all-inclusive list and the Engineer will make the final determination as to the acceptability of the proposed independent witness.

d. Engineer Factory Selection and Witness of Manufacturer Testing: The Contractor may select this option if the luminaire manufacturing facility is within the state of Illinois. At the Manufacturer's facility, the Engineer shall select the luminaires to be tested and shall be present during the testing process. The Contractor shall schedule travel by the Engineer to and from the Manufacturer's laboratory to witness the performance of the required tests.

Should any of the tested luminaires fail to satisfy the specifications and perform according to approved submittal information, the luminaire shall be unacceptable and be replaced by alternate equipment meeting the specifications with the submittal and testing process repeated in their entirety; or corrections made to achieve required performance. In the case of corrections, the Contractor shall advise the Engineer of corrections made and shall request a repeat of the specified testing and, if the corrections are deemed reasonable by the Engineer, the testing process shall be repeated. The number of luminaires to be tested shall be the same quantity as originally tested; i.e. if three luminaires were tested originally, one, two or three failed, another three must be tested after corrective action is taken.

Revise Article 1067.06(a)(1) of the Standard Specifications to read:

"The lamps shall be of the clear type and shall have a color of 1900° to 2200° Kelvin."

Add the following table(s) to Article 1067 of the Standard Specifications:

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE
4 Lane Cross Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	48(ft)
	Number of Lanes	4
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	47.5 (ft)
	Mast Arm Length	6(ft)
	Pole Set-Back From Edge of Pavement	10.75(ft)
LUMINAIRE DATA	Lamp Type	HPS
	Lamp Lumens	50,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control Of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type 3
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	170(ft)
	Configuration	Single Sided
	Luminaire Overhang over edge of pavement	-4.75(ft)

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
LUMINANCE	Average Luminance, L_{AVE}	0.8 Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1 (Max)
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1 (Max)
	Veiling Luminance Ratio, L_V/L_{AVE}	0.3:1 (Max)

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

Add the following table(s) to Article 1067 of the Standard Specifications:

IDOT DISTRICT 1 LUMINAIRE PERFORMANCE TABLE
2 Lane Cross Section

GIVEN CONDITIONS		
ROADWAY DATA	Pavement Width	24(ft)
	Number of Lanes	2
	I.E.S. Surface Classification	R3
	Q-Zero Value	.07
LIGHT POLE DATA	Mounting Height	47.5 (ft)
	Mast Arm Length	6(ft)
	Pole Set-Back From Edge of Pavement	10.75(ft)
LUMINAIRE DATA	Lamp Type	HPS
	Lamp Lumens	50,000
	I.E.S. Vertical Distribution	Medium
	I.E.S. Control Of Distribution	Cutoff
	I.E.S. Lateral Distribution	Type 2
	Total Light Loss Factor	0.70
LAYOUT DATA	Spacing	220(ft)
	Configuration	Single Sided
	Luminaire Overhang over edge of pavement	-4.75(ft)

NOTE: Variations from the above specified I.E.S. distribution pattern may be requested and acceptance of variations will be subject to review by the Engineer based on how well the performance requirements are met.

PERFORMANCE REQUIREMENTS		
LUMINANCE	Average Luminance, L_{AVE}	0.8 Cd/m^2
	Uniformity Ratio, L_{AVE}/L_{MIN}	3.0:1 (Max)
	Uniformity Ratio, L_{MAX}/L_{MIN}	5.0:1 (Max)
	Veiling Luminance Ratio, L_V/L_{AVE}	0.3:1 (Max)

NOTE: These performance requirements shall be the minimum acceptable standards of photometric performance for the luminaire, based on the given conditions listed above.

LUMINAIRE SAFETY CABLE ASSEMBLY
Effective: January 1, 2012

Description: This item shall consist of providing a luminaire safety cable assembly as specified herein and as indicated in the plans.

Materials. Materials shall be according to the following:

Wire Rope. Cables (wire rope) shall be manufactured from Type 304 or Type 316 stainless steel having a maximum carbon content of 0.08 % and shall be a stranded assembly. Cables shall be 3.18 mm (0.125") diameter, 7x19 Class strand core and shall have no strand joints or strand splices.

Cables shall be manufactured and listed for compliance with Federal Specification RR-W-410 and Mil-DTL-83420.

Cable terminals shall be stainless steel compatible with the cable and as recommended by the cable manufacturer. Terminations and clips shall be the same stainless steel grade as the wire rope they are connected to.

U-Bolts. U-Bolts and associated nuts, lock washers, and mounting plates shall be manufactured from Type 304 or Type 316 stainless steel.

CONSTRUCTION REQUIREMENTS

General. The safety cable assembly shall be installed as indicated in the plan details. One end of the cable assembly shall have a loop fabricated from a stainless steel compression sleeve. The other end of the cable assembly shall be connected with stainless steel wire rope clips as indicated. Slack shall be kept to a minimum to prevent the luminaire from creeping off the end of the mast arm. Unless otherwise indicated in the plans, the luminaire safety cable shall only be used in conjunction with luminaires which are directly above the traveled pavement.

Basis of Payment: This work shall be paid for at the contract price each for LUMINAIRE SAFETY CABLE ASSEMBLY, which shall be payment for the work as described herein and as indicated in the plans.

EXPOSED RACEWAYS
Effective: January 1, 2012

Revise the first paragraph of Article 811.03(a) of the Standard Specifications to read:

> "General. Rigid metal conduit installation shall be according to Article 810.05(a). Conduits terminating in junction and pull boxes shall be terminated with insulated and gasketed watertight threaded NEMA 4X conduit hubs. The hubs shall be Listed under UL 514B. The insulated throat shall be rated up to 105º C. When PVC coated conduit is utilized, the aforementioned hubs shall also be PVC coated."

Add the following to Article 811.03(b) of the Standard Specifications:

> "Where PVC coated conduit is utilized, all conduit fittings, couplings and clamps shall be PVC coated. All other mounting hardware and appurtenances shall be stainless steel."
>
> "The personnel installing the PVC coated conduit must be trained and certified by the PVC coated conduit Manufacturer or Manufacturer's representative to install PVC coated conduit. Documentation demonstrating this requirement must be submitted for review and approval."

Add the following to Article 1088.01(a) of the Standard Specifications:

> All iron and steel products, which are to be incorporated into the work, including conduit and all conduit fittings, shall be domestically manufactured or produced and fabricated as specified in Article 106."

Revise Article 1088.01(a)(3) of the Standard Specifications to read:

"a. PVC Coated Steel Conduit. The PVC coated rigid metal conduit shall be UL Listed (UL 6). The PVC coating must have been investigated by UL as providing the primary corrosion protection for the rigid metal conduit. Ferrous fittings for general service locations shall be UL Listed with PVC as the primary corrosion protection. Hazardous location fittings, prior to plastic coating shall be UL listed.

b. The PVC coating shall have the following characteristics:

Hardness:	85+ Shore A Durometer
Dielectric Strength:	400V/mil @ 60 Hz
Aging:	1,000 Hours Atlas Weatherometer
Temperature	The PVC compound shall conform at 0º F. to Federal Specifications PL-406b, Method 2051, Amendment 1 of 25 September 1952 (ASTM D 746)
Elongation:	200%

c. The exterior and interior galvanized conduit surface shall be chemically treated to enhance PVC coating adhesion and shall also be coated with a primer before the PVC coating to ensure a bond between the zinc substrate and the PVC coating. The bond strength created shall be greater than the tensile strength of the plastic coating.

d. The nominal thickness of the PVC coating shall be 1 mm (40 mils). The PVC exterior and urethane interior coatings applied to the conduit shall afford sufficient flexibility to permit field bending without cracking or flaking at temperatures above -1°C (30°F).

e. An interior urethane coating shall be uniformly and consistently applied to the interior of all conduit and fittings. This internal coating shall be a nominal 2 mil thickness. The interior coating shall be applied in a manner so there are no runs, drips, or pinholes at any point. The coating shall not peel, flake, or chip off after a cut is made in the conduit or a scratch is made in the coating.

f. Conduit bodies shall have a tongue-in-groove gasket for maximum sealing capability. The design shall incorporate a positive placement feature to assure proper installation. Certified test results confirming seal performance at 15 psig (positive) and 25 in. of mercury (vacuum) for 72 hours shall be submitted for review when requested by the Engineer.

g. The PVC conduit shall pass the following tests:

Exterior PVC Bond test RN1:

Two parallel cuts 13 mm (1/2 inch) apart and 40 mm (1 1/2 inches) in length shall be made with a sharp knife along the longitudinal axis. A third cut shall be made perpendicular to and crossing the longitudinal cuts at one end. The knife shall then be worked under the PVC coating for 13 mm (1/2 inch) to free the coating from the metal.

Using pliers, the freed PVC tab shall be pulled with a force applied vertically and away from the conduit. The PVC tab shall tear rather than cause any additional PVC coating to separate from the substrate.

Boil Test:

Acceptable conduit coating bonds (exterior and interior) shall be confirmed if there is no disbondment after a minimum average of 200 hours in boiling water or exposure to steam vapor at one atmosphere. Certified test results from a national recognized independent testing laboratory shall be submitted for review and approval. The RN1 Bond Test and the Standard Method for Measuring Adhesion by Tape Test shall be utilized.

Exterior Adhesion. In accordance with ASTM D870, a 6" length of conduit test specimen shall be placed in boiling water. The specimen shall be periodically removed, cooled to ambient temperature and immediately tested according to the bond test (RN1). When the PVC coating separates from the substrate, the boil time to failure in hours shall be recorded.

Interior Adhesion. In accordance with ASTM D3359, a 6" conduit test specimen shall be cut in half longitudinally and placed in boiling water or directly above boiling water with the urethane surface facing down. The specimen shall be periodically removed, cooled to ambient temperature and tested in accordance with the Standard Method of Adhesion by Tape Test (ASTM D3359). When the coating disbonds, the time to failure in hours shall be recorded.

Heat/Humidity Test:

Acceptable conduit coating bonds shall be confirmed by a minimum average of 30 days in the Heat and Humidity Test. The RN1 Bond Test and the Standard Method for Measuring Adhesion by Tape Test shall be utilized.

Exterior Adhesion. In accordance with ASTM D1151, D1735, D2247 and D4585, conduit specimens shall be placed in a heat and humidity environment where the temperature is maintained at 150°F (66°C) and 95% relative humidity. The specimens shall be periodically removed and a bond test (RN1) performed. When the PVC coating separates from the substrate, the exposure time to failure in days shall be recorded.

Interior Adhesion. In accordance with ASTM D3359, conduit specimens shall be placed in a heat and humidity environment where the temperature is maintained at 150°F (66°C) and 95% relative humidity. When the coating disbonds, the time to failure in hours shall be recorded.

Add the following to Article 1088.01(a)(4) of the Standard Specifications:

"All liquid tight flexible metal conduit fittings shall have an insulated throat to prevent abrasion of the conductors and shall have a captive sealing O-ring gasket. The fittings shall be Listed under UL 514B. The insulated throat shall be rated up to 105º C."

Revise the second paragraph of Article 811.04 of the Standard Specifications to read:

"Expansion fittings and LFNC will not be measured for payment."

Revise Article 811.05 of the Standard Specifications to read:

"811.05 Basis of Payment. This work will be paid for at the contract unit price per meter (foot) for CONDUIT ATTACHED TO STRUCTURE, of the diameter specified, RIGID GALVANIZED STEEL or CONDUIT ATTACHED TO STRUCTURE, of the diameter specified, RIGID GALVANIZED STEEL, PVC COATED."

UNDERGROUND RACEWAYS
Effective: January 1, 2012

Revise Article 810.04 of the Standard Specifications to read:

> "Installation. All underground conduit shall have a minimum depth of 30-inches (700 mm) below the finished grade."

Add the following to Article 810.04 of the Standard Specifications:

> "All metal conduit installed underground shall be Rigid Steel Conduit unless otherwise indicated on the plans."

Add the following to Article 810.04 of the Standard Specifications:

> "All raceways which extend outside of a structure or duct bank but are not terminated in a cabinet, junction box, pull box, handhole, post, pole, or pedestal shall extend a minimum or 300 mm (12") or the length shown on the plans beyond the structure or duct bank. The end of this extension shall be capped and sealed with a cap designed for the conduit to be capped. The ends of rigid metal conduit to be capped shall be threaded, the threads protected with full galvanizing, and capped with a threaded galvanized steel cap. The ends of rigid nonmetallic conduit and coilable nonmetallic conduit shall be capped with a rigid PVC cap of not less than 3 mm (0.125") thick. The cap shall be sealed to the conduit using a room-temperature-vulcanizing (RTV) sealant compatible with the material of both the cap and the conduit. A washer or similar metal ring shall be glued to the inside center of the cap with epoxy, and the pull cord shall be tied to this ring."

Add the following to Article 810.04(c) of the Standard Specifications:

> "Coilable non-metallic conduit shall be machine straightened to remove the longitudinal curvature caused by coiling the conduit onto reels prior to installing in trench, encasing in concrete or embedding in structure. The straightening shall not deform the cross-section of the conduit such that any two measured outside diameters, each from any location and at any orientation around the longitudinal axis along the conduit differ by more than 6 mm (0.25")." The longitudinal axis of the straightened conduit shall not deviate by more than 20 mm per meter (0.25" per foot" from a straight line. The HDPE and straightening mechanism manufacturer operating temperatures shall be followed.

UNIT DUCT
Effective: January 1, 2012

Revise the first paragraph of Article 810.04 to read:

"The unit duct shall be installed at a minimum depth of 30-inches (760 mm) unless otherwise directed by the Engineer."

Revise Article 1088.01(c) to read:

"(c) Coilable Nonmetallic Conduit.

General:

The duct shall be a plastic duct which is intended for underground use and which can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance. The duct shall be a plastic duct which is intended for underground use and can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties of performance.

The duct shall be made of high density polyethylene which shall meet the requirements of ASTM D 2447, for schedule 40. The duct shall be composed of black high density polyethylene meeting the requirements of ASTM D 3350, Class C, Grade P33. The wall thickness shall be in accordance with Table 2 for ASTM D 2447.

The duct shall be UL Listed per 651-B for continuous length HDPE coiled conduit. The duct shall also comply with NEC Article 354.100 and 354.120.

Submittal information shall demonstrate compliance with the details of these requirements.

Dimensions:

Duct dimensions shall conform to the standards listed in ASTM D2447. Submittal information shall demonstrate compliance with these requirements.

Nominal Size		Nominal I.D.		Nominal O.D.		Minimum Wall	
mm	in	mm	in	mm	in	mm	in
31.75	1.25	35.05	1.380	42.16	1.660	3.556 +0.51	0.140 +0.020
38.1	1.50	40.89	1.610	48.26	1.900	3.683 +0.51	0.145 +0.020

Nominal Size		Pulled Tensile	
mm	in	N	lbs
31.75	1.25	3322	747
38.1	1.50	3972	893

Marking:

As specified in NEMA Standard Publication No. TC-7, the duct shall be clearly and durably marked at least every 3.05 meters (10 feet) with the material designation (HDPE for high density polyethylene), nominal size of the duct and the name and/or trademark of the manufacturer.

Performance Tests:

Polyethylene Duct testing procedures and test results shall meet the requirements of UL 651. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the duct. Duct crush test results shall meet or exceed the following requirements:

Duct Diameter		**Min. force required to deform sample 50%**	
mm	in	N	lbs
35	1.25	4937	1110
41	1.5	4559	1025

WIRE AND CABLE
Effective: January 1, 2012

Add the following to the first paragraph of Article 1066.02(a):

"The cable shall be rated at a minimum of 90°C dry and 75°C wet and shall be suitable for installation in wet and dry locations, and shall be resistant to oils and chemicals."

Revise the Aerial Electric Cable Properties table of Article 1066.03(a)(3) to read:

Aerial Electric Cable Properties

Phase Conductor				Messenger wire	
Size AWG	Stranding	Average Insulation Thickness		Minimum Size AWG	Stranding
		mm	mils		
6	7	1.1	(45)	6	6/1
4	7	1.1	(45)	4	6/1
2	7	1.1	(45)	2	6/1
1/0	19	1.5	(60)	1/0	6/1
2/0	19	1.5	(60)	2/0	6/1
3/0	19	1.5	(60)	3/0	6/1
4/0	19	1.5	(60)	4/0	6/1

Add the following to Article 1066.03(b) of the Standard Specifications:

"Cable sized No. 2 AWG and smaller shall be U.L. listed Type RHH/RHW and may be Type RHH/RHW/USE. Cable sized larger than No. 2 AWG shall be U.L. listed Type RHH/RHW/USE."

Revise Article 1066.04 to read:

"Aerial Cable Assembly. The aerial cable shall be an assembly of insulated aluminum conductors according to Section 1066.02 and 1066.03. Unless otherwise indicated, the cable assembly shall be composed of three insulated conductors and a steel reinforced bare aluminum conductor (ACSR) to be used as the ground conductor. Unless otherwise indicated, the code word designation of this cable assembly is "Palomino". The steel reinforced aluminum conductor shall conform to ASTM B-232. The cable shall be assembled according to ANSI/ICEA S-76-474."

Revise the second paragraph of Article 1066.05 to read:

"The tape shall have reinforced metallic detection capabilities consisting of a woven reinforced polyethylene tape with a metallic core or backing."

LIGHTING CONTROLLER, BASE MOUNTED, 480 VOLT, 200AMP (DUAL), RADIO SCADA
Effective: January 1, 2012

Description: This work shall consist of furnishing and installing a roadway lighting electrical control cabinet with radio control complete with foundation and wiring for the control of highway lighting.

General. The completed controller shall be an Industrial Control Panel under UL 508, and shall be suitable for use as service equipment

Double Door Enclosure.

Cabinet. The cabinet shall be of the dimensions shown on the plans and fabricated from 1/8 in. (3 mm) thick aluminum alloy No. 3003-H14. The cabinet shall comply with ANSI C 33.71 and UL 50 and be reinforced with aluminum angles.

Doors. The doors shall have stainless steel hinges. The door handle shall be stainless steel, a minimum diameter of 1/2 in. (13 mm) and be furnished with a rain and ice resistant lock. The doors shall be gasketed to exclude the entry of moisture, dirt, and insects. A linkage-arm system, of simple construction, shall be attached to the cabinet doors to allow securing in a wide open position during field operations.

Insulation. When specified, the interior compartment shall be insulated on the inside of the sides, back, top, bottom, and inside of the doors with 1 in. (25 mm) thick polyisocyanurate rigid foam insulation board. The foam board shall have foil facers on each side. The side facing the interior of the cabinet shall have a white tinted foil facer with a satin finish. The insulation shall have a minimum aged thermal resistance (R-value) of 8 at a 40°F (4°C) mean temperature. The insulation shall comply with Federal Specification HH-I-1972/1, Class 2.

Mounting. The cabinet shall be mounted as indicated on the plans.

Work Pad. Except where the cabinet is facing a sidewalk, a poured, 4 in. (100 mm) thick concrete pad, not less than 48 in. (1.2 m) square shall be provided in front of the cabinet.

Finish. All aluminum enclosures shall be finished.

Surface Preparation: The cabinet, doors and all other parts to be painted will be submerged in each tank of a 3 step iron phosphate conversion technique. After phosphatizing the parts shall be passed through an oven and baked to eliminate any moisture.

Finish coat: Shall be polyester powder paint applied electrostatically to a minimum thickness of 2 mils and baked at 375°F for 20 minutes.

The color of the finish paint shall be ANSI Standard No. 70 Sky Gray or as specified by the Engineer.

The finish shall be applied according to the paint manufacturer's recommendations and the manufacturer shall certify, in writing, to the Department, that the finish has been applied properly.

Submittal data submitted for approval shall address the requirement for the paint manufacturer's certification and shall include a standard, single source paint warranty by the paint manufacturer of the controller manufacturer to the Department.

Identification. The cabinet door shall have a stainless steel name plate of the dimensions and engraving indicated on the plans. An identification decal shall also be installed on the back of the cabinet as specified elsewhere herein.

Control Components.

Time Switch. When specified, each controller shall have an electric time switch for automatic control of highway lighting circuits operating on a daily schedule having a fixed relation to sunrise and sunset. Turn-on and Turn-off times shall be adjustable ± 45 minutes from sunrise and sunset. All settings shall be field adjustable without special tools. Complete installation instructions, details on wiring connections, and information on time setting, manual operation, and necessary adjustments shall be furnished with each time switch.

The time switch shall be a microprocessor-based two channel controller with astronomic functions on both channels. The latitude shall be adjustable from ten to 60 degrees in the Northern hemisphere. Latitude changes shall be user ettable without the use of special tools.

The time switch shall be programmable in an AM/PM format, with a resolution of one minute or better. The time switch shall automatically adjust for daylight saving time and have automatic leap year correction and operate on 240 V AC without the use of an additional transformer.

A battery backup shall be integral with the controller and shall use a nickel-cadmium battery. The battery backup shall provide power to the controller memory for a minimum of 72 hours in the event of power failures.

The published operating temperature range of the time switch shall be from 86 to 158°F (-30 to 70°C).

The time switch output relay contacts shall be rated sufficiently to handle the inrush current of two 200 A contactors. The time switch shall have a NEMA Type 1 enclosure as a minimum. The time switch programming instructions shall be moisture proof and permanently affixed to the time switch or as otherwise approved by the Engineer.

Circuit Breakers.

All feeders, branch circuits, and auxiliary and control circuits shall have overcurrent protection. The overcurrent protection shall be by means of circuit breakers.

Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type circuit breakers with trip free indicating handles.

240 V circuit breakers shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated circuit voltage for which the breaker is applied. 480 V applications shall have a UL listed interrupting rating of not less than 14,000 rms symmetrical amperes at rated circuit voltage.

Multi-pole circuit breakers larger than 100 A size shall have adjustable magnetic trip settings.

The number of branch circuit breakers shall be as indicated on the Control Cabinet detail drawing or as indicated in the lighting system wiring diagram which ever is greater plus two spare circuit breakers.

Contactors.

Contactors shall be electrically operated, mechanically held as specified, with the number of poles required for the service and with operating coil voltage as indicated. The contactor shall have an in-line drive operating mechanism. Ampere rating of contactors shall be not less than required for the duty shown and shall otherwise be rated as indicated.

Contactors shall be complete with a non-conducting inorganic, non-asbestos subpanel for mounting.

Mechanically held contactors shall be complete with coil clearing contacts to interrupt current through the coil once the contactor is held in position.

The main contactor contacts shall be the double break, silver to silver type. They shall be spring loaded and provide a wiping action when opening and closing. The contacts shall be renewable from the front panel, self-aligning, and protected by auxiliary arcing contacts.

The line and load terminals shall be pressure type terminals of copper construction and of the proper size for the ampere rating of the contactor.

A lever for manual operation shall be incorporated in the mechanically held contactor. Protection from accidental contact with current carrying parts when operating the contactor manually shall be provided.

The contactor operating coil shall operate at phase to neutral voltage. Single phase contactors shall be two pole devices with continuous rating for the amperage selected per pole.

Open and closed positions for mechanically held contactors shall be clearly indicated and labeled in permanent manner as approved by the Engineer.

Auto/Manual Switches. The cabinet shall be equipped with automatic and manual operating controls via two, single pole double throw switches, one being a maintained-contact manual-automatic selector switch and one being a momentary-contact manual on-off switch with a center rest position. Both switches shall be premium specification grade, rated for the applied duty but not less than 20 A at 240 V and each shall be mounted in a 4 in. (100 mm) square box with cover.

The control circuit shall have overcurrent protection as indicated and as required by NEC requirements.

Ground & Neutral Bus Bars.

Separate ground and neutral bus bars shall be provided. The ground bus bar shall be copper, mounted on the equipment panel, fitted with 22 connectors of the type shown on the plans, as a minimum. The neutral bar shall be similar. The heads of connector screws shall be painted white for neutral bar connectors and green for ground bar connectors.

Interior Lighting, Receptacle and CCTV power.

The cabinet shall have an auxiliary device circuit at 120 V single phase to supply a convenience receptacle, cabinet light and a dedicated 120v circuit for CCTV camera power indicated in the plans. Where 120 V is not available directly from the service voltage, an outdoor dry type step-down transformer not less than 2 KVA shall be provided as described elsewhere herein.

The auxiliary circuit, including transformer primary and secondary, shall have overcurrent protection according to NEC requirements.

The interior, 60 W incandescent lighting fixture of the enclosed-and-gasketed type, shall be switched from a single pole, single throw, 20 A switch. The switch shall be premium specification grade in a suitable 4 in. (100 mm) box with a cover.

A 20 A duplex receptacle, ground fault interrupting, premium specification grade shall be furnished in a 4 in. (100 mm) square box with cover, for 120 V auxiliary use.

Surge Arrester.

The control circuit in the cabinet shall be protected by a surge arrester meeting the requirements of Article 1065.02.

Wiring and Identification.

Power wiring within the cabinet shall be of the size specified for the corresponding service conductors and branch circuits and shall be rated RHH/RHW, 600 V.

Control and auxiliary circuit wiring shall be rated RHH/RHW or MTW with jacket, 600 V.

All power and control wiring shall be stranded copper. When specified all wiring shall be tagged with self-sticking cable markers. When the contract drawings do not specifically indicate assigned wire designations, the manufacturer shall assign wire designations and indicate them on the shop drawings.

All switches, controls and the like shall be identified both as to function and position (as applicable) by means of engraved two color nameplates attached with screws, or where nameplate are not possible in the judgment of the Engineer, by the use of cloth-backed adhesive labels as approved by the Engineer.

The cabinet with all of its electrical components and parts shall be assembled in a neat orderly fashion. All of the electrical cables shall be installed in a trim, neat, professional manner. The cables shall be trained in straight horizontal and vertical directions and be parallel, next to, and adjacent to other cables whenever possible.

Transformer, General Purpose.

The transformer shall be dry type and weatherproof so that it may be installed indoors or outdoors without additional housing. It shall have an enclosure for splices with provisions for weather tight conduit connections.

The transformer shall have four taps on the primary side, one at 2 1/2 percent, one at 5 percent, one at 7 1/2 percent and one at ten percent below rated voltage.

Insulation shall be Class F or Class H. The transformer shall meet the applicable ASA and IEEE standards.

Mounting and back plates shall be of Aluminum Alloy 2024, 3003 or 6061. Bolts, nuts and washers shall be of Series 300 stainless steel. Bolts shall have hexheads. Nuts shall be hexagon and self-locking. Washers shall be of the flat type.

Radio Control Equipment.

Receiver - Decoder: The radio control module consists of a radio receiver, digital decoder, and an output interface which allows centralized remote radio control of the lighting controller turn-on and turn-off functions. The radio control module must be capable of operation consistent with the existing radio control system, a Motorola SCADA Central Station.

The existing control system currently operates over 250 discrete lighting controllers via a securely coded proprietary data scheme. For this reason, the control module must consist of a Motorola ACE 3600 Modular Remote Unit, model F 7563, (small housing), with no less than the following options:

Motorola Designation	**Description**
F 7563 (VHF), F 7564 (UHF)	ACE 3600 CPU *
V 245	Mixed I/O
V 261	240 VAC Power Supply w/charger
Z 857AA	Surge Protection

* Includes (1) three slot frame, (1) ACE 3600 CPU plus firmware, (1) mixed I/O Module, (1) VHF or UHF (as directed by the Engineer) CDM 750 Radio with FSK Radio Interface, port 3 (1) AC Power Supply with Charger, (1) 6.5 Ah battery, installed in a 15“ X 15” X 8.26” NEMA 4X/IP 56 painted metal enclosure with instruction manual.

The manufacturer's designation by no means relieves the Contractor of providing a fully functional radio system as described herein.

A 120/240 to 24VAC step down transformer shall be included for the SCADA system.

The Radio Control Module shall be programmed for the following operational parameters:

- Transceiver Frequency: To be specified by the Engineer
- Receive Frequency: To be specified by the Engineer
- Communications Failure Preset: Normally Open
- Individual Station address: To be specified by the Engineer

Antenna. The antenna shall be thick mount up to ½" mounting surface mounted by screw adapter (no magnet mounts). The low profile antenna mount shall be equivalent to Antenex – MABT8XNSI antenna Mount Low Profile. Accompanying antenna shall be equivalent to Antenex – B132 (Broad Band – VHF/UHF ¼ wave 150-928 MHz. Accompanying cable shall be equivalent to Antenex-RG8X and conductor equivalent to Antenex – CN8X from Radio to Antenna and shall be of appropriate length and not longer than 8 ft.

Installation. I/O Module. All motherboard cards shall be configured and installed as per manufacturer's specifications and IDOT specification Ltg SCADA 397. Modules include but are not limited to; CPU, Mixed I/O. All digital inputs terminated on the Mixed I/O card shall be dry. Termination points for all digital input points will be reflected on power center wiring diagram or additional wiring schematic provided by the engineer. All digital outputs received from the Mixed I/O card shall be rated at 24 VAC 2A. All digital outputs shall be connected to interposing relays prior to being integrated into the power center wiring logic. The digital outputs shall maintain a momentary closure for approximately 2 seconds.

All wiring termination points shall be tagged using the nomenclature given on the wiring diagram. The alarms acknowledge button shall be implemented with a placard stating "Alarm Acknowledge". Site configuration, map implementation, screens tagging and other related software configurations shall be specified elsewhere herein.

The antenna shall be centered on the top of the control cabinet. The antenna cable shall be dressed and trimmed for minimal length, allowing sufficient slack of removal of the radio connection for replacement or testing without disruption to the installation. The antenna connector shall be properly soldered to the cable assembly. Great care shall be exercised in the assembly of the antenna connector, excessive heat will destroy the inner insulation, and insufficient heat will produce a cold solder connection on the outer shield.

Intra-module wiring shall be 18 AWG stranded wire, color coded (American) consistent with battery polarity, and signal. The wire connection from terminal block (TB2) to the interpose relays shall be 14AWG stranded. All wires connected to the radio modules shall be dressed and tinned prior to insertion, (crimp on connectors will not be allowed for use in the radio system). Cost of all wire is inclusive within the scope of this work.

A terminal strip separate from the integral radio module and power supply shall be provided to interface power and signal conductors to the lighting controller. Terminals and wiring shall be labeled in accordance with the drawings, and dressed to allow service. The radio module shall be provided with constant 240 VAC power. The control power breaker shall provide power for the SCADA system. This is to allow the system to be energized at all times.

The SCADA system shall be tested in conjunction with the controller inspection, prior to field installation. The turn-on and turn-off function shall be tested ten (10) consecutive times utilizing actual signals originating from District 1 Headquarters. Any failures must be cleared before the controller is delivered to the job site.

Null covers shall be provided for the slots not used. All analog inputs shall be 4-20 mA. All I-O wiring including analog and digital shall be wired as per the enclosed table.

SCADA System Control Relay Assembly. The Contractor shall mount and wire four (4) relays in a box as shown in the wiring diagram. Two relays shall be 240 volts sealed type and two relays shall be 24 volts sealed type, unless otherwise indicated, shall have contacts rated at not less than 20 amperes at 240 volts. The power relay for activating the lighting contactors shall have contacts rated to handle the contactor inrush. The relays shall be wired to a marked terminal strip.

Testing. As part of final acceptance testing, all individual I/O points and internal status alarms shall be tested for proper operation and transmission. The transmission shall be confirmed at IDOT District 1 HQ. and the contractors dispatch facility. This full SCADA system start-up shall be completed with the Engineer present.

The SCADA radio system shall have the following items tested: VSWR, cable impedance, RSSI to the power center and confirmation that data sent from power center is received by the IDOT lighting system computers.

Analog Inputs And Transducers. The panel shall include one voltage transducer for monitoring the line voltage and one current transducer for monitoring the neutral current. Their outputs shall be 4-20 mA DC each and shall be wired to channels 1 and 2 of the Mixed I/O module as shown. The voltage transducer shall be Scientific Columbus Model # VT110 – PAN7 – A4-2 for 480/240 volt single phase systems. The current transducers shall be Mel Kirchler Technologies Model # AT2-420-24L-FT, with power supply, PS-240-24P-1A. Both analog inputs shall be wired using shielded cable. Both transducers shall also be calibrated so that the SCADA system reads the correct value.

Testing Of The Assembled Cabinet. Prior to shipment of the completed control cabinet, the control cabinet shall be tested for load, short circuits and complete operation of the cabinet as specified herein and as shown on the plans. The test shall be made at the manufacturer's shop, by the manufacturer and shall be witnessed by the Engineer. The Contractor shall arrange the test date with the Engineer and so allow not less than seven (7) days advance notice. The cabinet shall not be delivered to the job site until inspected, tested and approved for delivery by the Engineer.

Staging. All Central Configuration programming be completed prior to the initial check out/PM of the SCADA unit in the field. This is to assure/confirm 2 way radio communications from the field RTU the Central. Lighting controller information submitted for approval shall include any recommendations of the Manufacturer for storage as provided under this contract.

The packaging of the lighting controller shall incorporate the provisions recommended by the Manufacturer to accommodate storage.

TERM	MOSCAD DESTINATION	WIRE #	DESCRIPTION OF INPUT
32	Analog Input 1 (+)	TB2 B11	CABINET NEUTRAL CURRENT
33	Analog Input 1 (-)	TB2 B1	CABINET NEUTRAL CURRENT
34	Analog Input 2 (+)	TB2 A2	CABINET SERVICE VOLTAGE
35	Analog Input 2 (-)	TB2 B2	CABINET SERVICE VOLTAGE
40	P. Ground	TB2 A3	GROUND
1	Digital Input 1	TB2 B3	ALARM ACKNOWLEDGE
2	Digital Input 2	TB2 A4	DOOR OPEN
3	Digital input 3	TB2 A5	MAIN(S) BREAKER OPEN
4	Digital input 4	TB2 A7	CONTACTOR 1 OPEN
5	Digital Input 5	TB2 A8	CONTACTOR 2 OPEN
6	Digital input 6	TB2 A9	CABINET IN NON-AUTO
7	Digital input 7	TB2 A10	BACK-UP CLOCK OFF CALL
8	Digital Input 8	TB2 A11	BACK-UP CLOCK ON CALL
18	DI Common	*	COMMON
20	K1 NO	TB2 A12	LIGHTS ON CALL
21	K1 Com	TB2 B17	K1 COMMON
23	K2 NO	TB2 A13	LIGHTS OFF CALL
24	K2 Com	TB2 B17	K2 COMMON
17	24 V+	TB2 B13	24+ VDC

All analog inputs will be 4-20 mA only. Digital output relays will be electrically energized and momentarily held.

Mixed I/O module model number V 245

Lighting SCADA RTU terminal Configuration.

Description. This work shall consist of having the SCADA system manufacturer design, implement and test a new RTU on the Lighting SCADA System on all system terminals.

Materials. All software work shall be completed by the manufacturer or approved factory licensed sales and service company for the SCADA equipment. All licensing shall be provided by the entity completing the work. Licenses are to be held by IDOT.

SCADA RTU Configuration and Programming:

1. Setup of CPU and accompanying modules.
2. Setup of RTU site number, octal address, group call and All Call.
3. Configure application alarm parameters (download config./application).
4. Development and implementation of control and alarm application from IDOT submitted telemetry requirements.

NOTE: IDOT shall supply checklist listing I/O, telemetry, all call, group call and individual call data.

SCADA Service/Client Wonderware Programming:

1. Add RTU to Wonderware.
2. Configure Wonderware to poll SCADA CPU for data on that specific RTU.
3. Setup servers and clients for alarm notification and database I/O, for that specific RTU.
4. Configure RTU polling.
5. Activate RTU on FIU polling.

SCADA FIU CPU Programming:

If RTU exists as an Intrac site, it will have to be setup as a MOSCAD site (MOSCAD CPU). If RTU is a new site, it will have to be configured as a MOSCAD site (MOSCAD CPU).

Submittals. The Motorola VAR shall submit ladder programming, quiescent telemetry and SCADA configuration files for approval by the IDOT Engineer. Submittal will be reviewed by the Engineer and returned noting changes and/or comments.

Testing and Documentation. As part of final acceptance testing, all individual I/O points and internal status (COS) alarms shall be tested for proper operation and transmission. The transmission shall be confirmed at IDOT Dist. HQ. And the contractors dispatch facility. This full SCADA system start-up shall be completed with the Engineer present.

The control cabinet shall be tested for complete operation and the electrical load on each circuit shall be measured and documented on the Log form L-3. The ground resistance test shall be performed by the Contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the Contractor and witnessed by the Engineer.

Installation. The lighting controller installation shall be according to the details, location, and orientation shown on the plans.

Work Pad. A 4 in. (100 mm) thick portland cement concrete work pad, not less than 48 x 48 in. (1.2 x 1.2 m) shall be provided in front of the cabinet, except where the cabinet faces an adjacent sidewalk.

All conduit entrances into the lighting controller shall be sealed with a pliable waterproof material.

Concrete Foundation. The Contractor shall confirm the orientation of the lighting controller, and its door side, with the Engineer, prior to installing the foundation. A portland cement concrete foundation shall be constructed to the details shown on the plans and is included as a part of this pay items and shall not be paid for separately. The top of the foundation shall be 12-inches above grade.

The lighting controller enclosure shall be set plumb and level on the foundation. It shall be fastened to the anchor rods with hot-dipped galvanized or stainless steel nuts and washers. Foundation mounted lighting controllers shall be caulked at the base with silicone.

Where the controller has a metal bottom plate, the plate shall be sealed with a rodent and dust/moisture barrier.

Grounding. Grounding shall be as shown on the lighting controller detail drawings. Ground rods, ground wells, connections, ground wire and other associated items shall be included in the cost the lighting controller and shall not be paid for separately."

Method Of Measurement. Each lighting controller shall be counted each for payment.

Basis Of Payment. This item shall be paid for at the contract unit price each for LIGHTING CONTROLLER, BASE MOUNTED, 480 VOLT, 200AMP (DUAL), RADIO SCADA, which shall be payment in full for the work, complete, as specified herein.

REMOVE EXISTING FLASHING BEACON INSTALLATION COMPLETE

Description. This item consists of the disconnecting, removing, and salvaging of an existing flashing beacon complete, including all controllers, junctions boxes, conduit, mounting brackets and appurtenances.

Construction Requirements. Disconnection and removal of the existing flashing beacon electric connection shall meet the requirements according to Section 895 of the Standard Specifications.

Removal. The Contractor must disconnect the existing power feed to the flashing beacon installations and remove the wiring back to the source providing power to the flashing beacon.

No removal work shall be permitted without approval from the Engineer. Cables in unit duct will be removed from the duct and become property of the Contractor. The empty duct shall be removed to 1 foot below ground level and the hole shall be backfilled.

All equipment and material removed as part of this item shall be disposed of properly.

Method of Measurement. Each existing flashing beacon installation that is disconnected, removed, and disposed of, including associated wiring, conduit, controller and junction boxes will be measured for payment.

Basis of Payment. This work will be paid for at the Contract unit price each for REMOVE EXISTING FLASHING BEACON INSTALLATION COMPLETE

REMOVAL OF LIGHTING UNIT, SALVAGE

Add the following to Article 842.03(b) of the Standard Specifications:

Removal of City of Chicago Lighting Unit, Salvage. City of Chicago underpass luminaires and all associated hardware and appurtenances shall remain the property of the City of Chicago and shall be delivered back to the City, unless otherwise directed by the Engineer. City of Chicago salvaged underpass lighting units must be delivered to the City storage yard located at 4100 South Cicero Avenue, Chicago, IL or to another City of Chicago locations as directed by the Engineer.

Transportation. The Contractor shall crate and transport the underpass luminaires in complete conformance with the manufacturer's recommendations. The Contractor shall make arrangements to transfer the street lighting equipment to the City of Chicago's storage facility located at 4100 South Cicero Avenue, Chicago, IL. This shall be done on weekdays between the hours of 8:00 a.m. and 4:00 p.m., excluding City holidays. Forty-eight hours advance notice is necessary before drop off of street lighting equipment.

UNDERGROUND CONDUIT, 2" DIA. SCHEDULE 80 (CDOT)
UNDERGROUND CONDUIT, 2 1/2" DIA. SCHEDULE 80 (CDOT)
UNDERGROUND CONDUIT, PVC., 4" DIA., SCHEDULE 80

Description. This work will consist of furnishing and installing Schedule 80 PVC conduit, fittings and accessories as part of the raceway either laid in trench, bored and pulled in place.

Construction Requirements. Furnishing and installing the conduits shall meet the requirements according to Section 810 of the Standard Specifications.

Materials. Polyvinyl chloride (PVC) conduit must conform to the requirements of the National Electrical Manufacturers Association Standard, Publication Number TC2 for EPC-80. Conduit color will be determined by the Resident Engineer.

Method of Measurement. This work will be measured for payment in feet in place. Measurements will be made in straight lines along the centerline of the conduit between ends and changes in direction.

Vertical conduit will be measured for payment. The vertical distance required for breakaway devices, barrier wall, concrete pedestals, etc. and the depth of any burial will be measured. Changes in direction assume perfect straight ling runs, ignoring actual raceway sweeps.

Basis of Payment. This work will be paid for at the contract unit price per foot for UNDERGROUND CONDUIT of the type and size as specified, which price will be payment in full for furnishing and installing the conduit and fittings complete.

MAINTENANCE OF STREET LIGHTING SYSTEM (CDOT)

Description. This item consists of furnishing all labor, equipment, and incidental materials for maintaining existing street lighting and underpass lighting systems until the proposed new equipment is installed, energized, tested, and accepted for operation by the Commissioner.

This item shall also consist of furnishing all labor, equipment and incidental materials required for protecting the existing electrical equipment within the construction zone from damage during the demolition of the existing bridge structures and construction of the new bridge structures for the duration of the project.

The Contractor shall be responsible for the proper operation, protection and maintenance of the following existing and proposed lighting systems under this contract:

- Existing CDOT Transclosure No. 1; All Circuits
- Existing CDOT Transclosure No. 2; All Circuits.
- Existing CDOT Underpass Lighting System for Martin Luther King Drive between 24th and 25th Streets.
- Existing CDOT Lighting Transclosure No. SLC-24, Circuits 3, 4, 6 and 8.
- Existing CDOT Lighting Transclosure No. SLC-25, Circuits 3 and 4.

The work must include any necessary temporary devices to maintain existing illumination. The location and protection devices necessary to comply with these requirements will be subject to the approval of the Commissioner.

Any temporary wire or cable which may be required to be installed overhead between existing poles, existing underpass luminaires, or temporary devices must be furnished, installed, terminated, and maintained in service until the proposed lighting equipment is installed, tested, and accepted for operation by the Commissioner.

Materials. Materials must be according to the applicable Department of Electrical Operations (DEO) Specifications and Articles of Standard Specifications Section 1000 - Materials as noted elsewhere in these Specifications.

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, and in accordance with Department of Electrical Operations Standards and the City of Chicago Electrical Code, except as herein modified.

The Contractor shall MAINTENANCE OF STREET LIGHTING SYSTEM (CDOT) (temporary and permanent) and proposed lighting systems, as well as receptacles and other ancillary devices connected to the applicable street or underpass lighting controllers. Effective the day the Contractor starts work, the Contractor must maintain the existing lighting equipment located within the project limits as it then exists.

Inspection of Electrical Systems: Add the following to Article 801.11 of the Standard Specifications:

"Maintenance Preconstruction Inspection:

General. Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, the Contractor must request a maintenance preconstruction site inspection, to be held in the presence of the Commissioner and a representative of the party or parties responsible for maintenance of any lighting and/or traffic control systems which may be affected by the work. The request for the maintenance preconstruction inspection must be made no less than seven (7) calendar days prior to the desired inspection date. The maintenance preconstruction inspection shall:

Establish the procedures for formal transfer of maintenance responsibility required for the construction period.

Establish the approximate location and operating condition of lighting and/or traffic control systems which may be affected by the work.

Marking of Existing Cable Systems. The party responsible for maintenance of any existing lighting and/or traffic control systems at the project site will, at the Contractor's request, mark and/or stake, once per location, all underground cable routes owned or maintained by the City. A project may involve multiple "locations" where separated electrical systems are involved (i.e. different controllers). The markings shall be taken to have a horizontal tolerance of at least one (1) foot to either side. The request for the cable locations and marking shall be made at the same time the request for the maintenance preconstruction inspection is made. The Contractor must exercise extreme caution where existing buried cable runs are involved. The markings of existing systems are made strictly for assistance to the Contractor and this does not relieve the Contractor of responsibility for the repair or replacement of any cable run damaged in the course of his work, as specified elsewhere herein. NOTE THAT THE CONTRACTOR WILL BE ENTITLED TO ONLY ONE REQUEST FOR LOCATION MARKING OF EXISTING SYSTEMS AND THAT MULTIPLE REQUESTS MAY ONLY BE HONORED AT THE CONTRACTOR'S EXPENSE. NO LOCATES WILL BE MADE AFTER MAINTENANCE IS TRANSFERRED, UNLESS IT IS AT THE CONTRACTOR'S EXPENSE.

Condition of Existing Systems. The Contractor must conduct an inventory of all existing electrical system equipment within the project limits, which may be affected by the work, making note of any parts which are found broken or missing, defective or malfunctioning. Megger and load readings must be taken for all existing circuits which will remain in place or be modified. If a circuit is to be taken out in its entirety, then readings do not have to be taken. The inventory and test data will be reviewed with and approved by the Commissioner and a record of the inventory must be submitted to the Commissioner for the record. Without such a record, all systems transferred to the Contractor for maintenance during construction must be returned at the end of construction in complete, fully operating condition."

Damage to Electrical Systems. Delete the last paragraph of Article 801.06 of the Standard Specifications.

Lighting Operation and Maintenance Responsibility. The scope of work includes the assumption of responsibility for the continuing operation of existing, temporary or other lighting systems and all appurtenances affected by the work as may be specified elsewhere herein. Existing lighting systems, when depicted on the plans, are intended only to indicate the general equipment installation of the systems involved and must not be construed as an exact representation of the field conditions. It remains the Contractor's responsibility to visit the site to confirm and ascertain the exact extent of the electrical equipment and systems to be maintained. Where there is existing lighting within the project limits, prior to the start of activities at the site, the Contractor must schedule a formal transfer of maintenance via the Commissioner, however failure to do so does not relieve the Contractor of the maintenance responsibility specified herein and such failure obligates the Contractor to correct deficiencies in the existing system at his own expense.

Effective the date the Contractor's activities (electrical or otherwise) at the job site begin, the Contractor will be responsible for the proper operation and maintenance of all existing lighting systems which may be affected by the work for which maintenance has been transferred to the Contractor and all temporary and newly constructed lighting systems under this Contract, until final acceptance or as otherwise determined by the Commissioner.

Except as specified herein, the Contractor's responsibility will include all applicable responsibilities of the City of Chicago, Department of Streets and Sanitation. These responsibilities will include lighting units (including underpass and navigational lighting), cable runs and lighting controls.

Electrical System Damage Response. The Contractor must respond to damage calls for all system components being maintained and/or installed by the Contractor, existing and proposed, including, but not limited to pole knockdowns, circuit outages, more than 3 luminaires on a circuit, 3 successive luminaires, and controller outages within one hour after notification and provide immediate corrective action. The Contractor must also repair other outages within 5 days. The Contractor must maintain in stock a sufficient amount of material and equipment to provide temporary and permanent repairs. Any damage to the lighting system from any cause whatsoever must be repaired or replaced in kind with equipment in the same condition before the incident or with new equipment provided by the Contractor at no additional cost to the Contract, all as approved by the Commissioner. If the Contractor fails to respond so as to produce immediate corrective action within the specified time frames, or fails to complete repairs in a timely manner the Commissioner may direct other forces, such as the City’s Maintenance Contractor, to perform the work. Charges incurred will be direct billed to the Contractor. The City will retain all rights to pursue claims against third parties in all situations regardless of who is maintaining the system. The Contractor must also provide the City with all accident and damage reports from any incidents.

Weekly Night-time Patrols. Responsibilities must also include weekly night-time patrol of the lighting system, with patrol reports filed immediately with the Commissioner and with deficiencies corrected within 24 hours of the patrol. Patrol reports must be presented on standard forms as designated by the Commissioner. Uncorrected deficiencies may be designated by the Commissioner as necessitating emergency repairs as described elsewhere herein. Failure to submit patrol reports on a weekly basis will result in a Penalty for Non-Compliance as specified herein.

Contractor's Responsibility. Existing lighting systems which may be affected by the work will include, as a minimum, all existing lighting units within the project limits and these units may be temporarily isolated by means of in-line waterproof fuse holders as approved by the Commissioner. When a controller is to be replaced or modified under the Contract work, or where otherwise indicated, the controller and all systems connected to it must be included in the Contractor's responsibility for proper operation of lighting systems. The Contract Drawings may indicate the general extent of any existing lighting, but whether indicated or not, it remains the Contractor's responsibility to ascertain the extent of effort required for compliance with these specifications and failure to do so will not be justification for extra payment or reduced responsibilities.

Energy and Demand Charges. The payment of basic energy and demand charges by the electric utility for existing lighting which remains in service will continue as a responsibility of the Owner, unless otherwise indicated. Unless otherwise indicated or required by the Commissioner duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously at the Owner's expense and lighting systems will not be kept in operation during long daytime periods at the Owner's expense. Upon written authorization from the Commissioner to place a proposed new lighting system in service, whether the system has passed final acceptance or not, (such as to allow temporary lighting to be removed), the Owner will accept responsibility for energy and demand charges for such lighting, effective the date of authorization. All other energy and demand payments to the utility will be the responsibility of the Contractor until final acceptance.

Coordination Requirements for Existing and Temporary Lighting. The Contractor must coordinate maintenance of existing, temporary, and proposed lighting with the sequence of construction and maintenance of traffic for this Project.

Installation. Location of cables and fixtures for temporary lighting as required must be adjusted and supported to accommodate field conditions encountered, including any potential interferences with other construction or equipment to be installed.

The Contractor will determine the exact route and location of each temporary lighting fixture and associated wiring, prior to installation.

Temporary lighting must be installed to permit removal (without damage to other parts) of parts requiring periodic replacement or maintenance.

Temporary wiring/lighting must be removed immediately upon acceptance of permanent lighting.

Penalty for Non-Compliance. The Contractor will be subject to a penalty of $500.00 per incident, per day, to be deducted from next pay estimate due Contractor, for each occurrence when the Commissioner determines that Contractor or his Subcontractor is not in full compliance with this Section of the Specifications.

Penalty for Failure to Respond. The Contractor is required to respond within ½ hour to any request from the Commissioner for repair or replacement of any broken, defective and/or missing parts as specified under this section. "Response" is interpreted to mean on the job, preparing to make repairs. Failure by Contractor to so respond will be grounds for a penalty of $500.00 for each and every occurrence, to be deducted from next pay estimate due Contractor.

Reimbursement. If the Contractor utilizes any lighting equipment owned by the City or uses existing COMED service, the Contractor must compensate the City for such usage.

Method of Measurement. MAINTENANCE OF STREET LIGHTING SYSTEM (CDOT) will be measured for payment per calendar month.

The contractor shall demonstrate to the satisfaction of the Engineer that the lighting system is fully operational prior to submitting a pay request. Failure to do so will be grounds for denying the pay request. Months in which the lighting systems are not maintained and not operational will not be paid for. Payment shall not be made retroactively for months in which lighting systems were not operational

Basis of Payment. This work will be paid for at the contract unit price per calendar month for MAINTENANCE OF STREET LIGHTING SYSTEM (CDOT), which will be payment in full for: furnishing and installing all temporary lighting units; maintaining existing, temporary, and proposed lighting systems; and aerial cable and ancillary equipment required to maintain the existing lighting system as described herein.

DISCONNECT SIGN LIGHTING AND REMOVE WIRING TO NEAREST SPLICE

Description. This item consists of the disconnection, removal, and disposal of the existing electric connection to the sign lighting. Removal of the existing sign luminaire(s) will not be included in this pay item and will be paid for separately under a separate pay item in accordance with Article 842.03 of the Standard Specifications.

Construction Requirements. Disconnection of the existing sign lighting electric connection shall meet the requirements according to Section 845.02 of the Standard Specifications.

Removal. The Contractor must disconnect the existing power feed to the sign lighting units and remove the wiring back to the nearest location where the sign lighting is spliced to the roadway lighting circuit. The Contractor must provide all materials and labor required to maintain operation of the existing lighting circuit.

No removal work shall be permitted without approval from the Engineer. Cables in unit duct will be removed from the duct and become property of the Contractor. The empty duct shall be removed to 1 foot below ground level and the hole shall be backfilled.

All equipment and material removed as part of this item shall become property of the Contractor and shall be removed from the site.

Method of Measurement. Each electric connection to an existing disconnect switch for sign lighting on a structure that is disconnected, removed, and disposed of, including associated wiring back to the nearest splice, will be measured for payment.

Basis of Payment. This work will be paid for at the Contract unit price each for DISCONNECT SIGN LIGHTING AND REMOVE WIRING TO NEAREST SPLICE.

TEMPORARY WOOD POLE, 60 FT., CLASS 4
TEMPORARY WOOD POLE, 80 FT., CLASS 4
TEMPORARY WOOD POLE, 50 FT., CLASS 4, 15 FT. MAST ARM
TEMPORARY WOOD POLE, 80 FT., CLASS 4, 15 FT. MAST ARM

Description. This item shall consist of furnishing and installing a temporary wood pole and mast arm, as specified herein and all hardware and accessories required for the intended temporary use of the pole.

Materials. Materials shall be according to the following Articles of Section 1000 - Materials

Item	Article/Section
(a) Light Pole Identification	1069.06
(b) Wood Pole	1069.04
(c) Mast Arm	1069.03(a)

CONSTRUCTION REQUIREMENTS

Installation. Installation shall be as described in Article 830.03(c). The Contractor shall provide all hardware to install the pole and mast arm as specified herein and indicated on the plans.

Wood poles may be used poles as approved by the Engineer as described in Article 830.04. The wood pole and mast arm, as applicable, shall remain the property of the Contractor and shall be removed when directed by the Engineer.

The void caused by the removal of the wood pole shall be backfilled according to Article 819.04.

Method Of Measurement. Wood poles shall be counted as, each installed.

Basis Of Payment. This item shall be paid at the contract unit price each for TEMPORARY WOOD POLE, of the mounting height, class, mast arm quantity and length indicated.

UNDERPASS LUMINAIRE, (SPECIAL)

Description. This item consists of furnishing and installing a City of Chicago LED underpass luminaire complete with drivers, lightning protection, fuses, pole wire, and electrical components, mounting hardware, flexible conduit and appurtenances for installation as shown on the Plans, as specified herein, and as directed by the Commissioner.

Materials. Materials must be according to the following manufacturer's specifications and Articles of Standard Specifications Section 1000 - Materials:

	Item	Requirement
(a)	Lamps	Light Emitter Diode, LED
(b)	Luminaire	HOLOPHANE TUNNELPASS LED Series, Model Number TNLED-3-4K-1-AS-CLN-DGRA-L-F2
(c)	Fuse Holders and Fuses	Standard Specifications, Article 1065.01
(d)	Junction Box	Standard Specifications, Article 1088.04
(c)	Electrical Raceway Materials	Standard Specifications, Article 1088.01

The catalog number given above is presented to assist in obtaining manufacturer information. The Contractor has the responsibility of verifying specification compliance and providing a luminaire as specified. The luminaire must comply with all items described herein, regardless of any assigned manufacturers catalog number, as approved by the Commissioner.

General Requirements. General requirements must be in accordance with Articles 801 and 821 of the Standard Specifications, and in accordance with Bureau of Electricity Standards and the City of Chicago Electrical Code, except as herein modified.

The underpass lighting luminaire must be a HOLOPHANE TUNNELPASS LED Series luminaire with 3 LED modules, 4000 color temperature rating, a CRI of 70 minimum and be double fused. The LED luminaire must have a borosilicate prismatic tempered glass lens, painted gray and be UL or CUL 1598 listed, 40 degrees C for wet locations.

The luminaire must have a die-cast aluminum A360 alloy housing with integral heat sink fins to optimize thermal management. The fixture housing must come with stainless steel mounting brackets, external hardware and latched door for easy access to the LED driver, surge devices, luminaire disconnect plug and terminal block. The fixture must have quick disconnect connectors for ease of installation and maintenance.

The luminaire shall have surge protection that meets 10KV/5KA per ANSI/IEEEC62.41.

The driver shall be 1 amp, Class 1, rated for 100,000 hours life with an auto-sensing voltage rating of 120-277 volts. The driver power factor shall be 90% minimum and meet maximum harmonic distortion (THD) of 20%

The luminaire shall be rated to 3G applications per ANSI C136.31-2001, IP 66 rated per IEC 60529 and the paint finish shall pass a 5000 salt fog test per ASTMB117 and D1654.

All luminaire components including the surge protection device, LED drivers and COB arrays shall be ROHS compliant.

Installation. Installation must be as described in Article 821.03 of the Standard Specifications.

The contractor is required to provide approved installation procedures and details for mounting the LED underpass fixture onto the bridge structure at the locations shown on the plans. The details must be designed and stamped by a registered engineer. The fixture mounting procedures and details must be formally submitted to the CDOT DEO for review and approval. No underpass lighting system work shall be started prior to acquiring approval from CDOT for the fixture mounting procedures and details. The work to providing approved mounting procedures and details will not be paid for separately but will be included in this item at no additional expense.

Method of Measurement. Each LED luminaire (complete with drivers, surge protection, fuses, junction box, electrical components, mounting hardware, and other appurtenances) that is furnished and installed as indicated will be counted as a unit for payment.

Basis of Payment. This work will be paid for at the contract unit price each for UNDERPASS LUMINAIRE, (SPECIAL) which will be payment in full for performing the work described herein.

LIGHTING CONTROLLER, SPECIAL

Description. This item consists of furnishing and installing an aluminum control cabinet mounted on a pier column containing various electro-mechanical devices which will automatically control and provide protection for City underpass lighting circuits and equipment.

The utility service voltage to this cabinet shall be a 120/240 volt, 1-phase, 3-wire system. The contractor shall coordinate the utility service feed to this cabinet with COMED.

Materials. The control cabinet shall be fabricated from type 304 stainless steel, be rated NEMA 4X and must comply with all applicable NEMA and UL standards. The cabinet must include a removable painted steel back panel, piano hinge, oil tight quarter turn latches, and a padlocking hasp. The minimum dimensions of the enclosure shall be 30”H X 20”W X 8”D with a back panel with minimum dimensions of 27”H X 17”W. The cabinet door shall be gasketed and all external hardware shall be stainless steel.

The main breaker must be a Westinghouse Cutler-Hammer type “BAB” 2-pole, 100 ampere main circuit breaker. Eight (8) Westinghouse Cutler-Hammer type “BAB” single pole, 20 ampere branch circuit breakers must be provided. The circuit breakers must have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated circuit voltage and be in accordance with all applicable requirements of the Bureau of Electricity City of Chicago Material Specification 1428 and as indicated on the Plans.

Photoelectric control must be Fisher Pierce 6600 Series with S476-71 mounting adaptor for direct ½" remote conduit mounting or equal as approved by the Commissioner.

The contactor must be an 8-pole ASCO-918 type remote control switch with option 47-L (two wire control) or equal as approved by the Commissioner.

Control wiring shall be stranded 12 AWG MTW and marked with BRADY markers.

Power wiring shall be rated RHH/RHW, 600V.

Connector screws shall be painted white for neutral bus and green for ground bus.

General Requirements. Installation must be in accordance with Section 801 of the Standard Specifications, Bureau of Electricity Standards, and the Chicago Electric Code except as herein modified.

Final design of the underpass lighting controller must be reviewed and approved by the Engineer and the Commissioner prior to beginning manufacture and assembly of equipment.

Installation. The controller cabinet must be mounted to structure with approved concrete anchors and spacers. The controller must be wired as indicated on the drawings. All remaining live bus must be suitably protected in a manner which allows the installation of individual circuit breakers without affecting the protection of the remaining bus.

A neutral bus must be supplied with the cabinet with one conductor bonded to the cabinet and another conductor bonded to a ground rod.

The cabinet grounding system including ground rod, cable, conduit and associated grounding fittings and exothermic welds shall be included in this pay item and will not be paid for a separately.

The installation of feeder cables and branch circuit cables must be performed in a neat and workman like manner with all cable trained around the cabinet, secured to the proper terminals and identified either by tagging of the cables or by identification of the branch breakers. This work will be included as part of the controller installation and not as a separate pay item.

All multiple connections to a single source will be accomplished by use of splice blocks or multi-connection lugs.

All switches and controls shall be identified by means of two color engraved nameplates.

The cabinet shall be provided with a stainless nameplate 3" X 11" engraved to read "CDOT UNDERPASS LIGHTING CONTROLLER".

The lighting circuit must be placed in operation as soon as practicable with the Contractor being charged for the energy until the circuits are accepted by the Chicago Bureau of Electricity.

Method of Measurement. Each lighting controller cabinet that is furnished and installed as directed will be counted as a unit for payment.

Basis of Payment. This work will be paid for at the contract unit price each for a LIGHTING CONTROLLER, SPECIAL which will be payment in full for performing the work described herein.

REMOVE AND RE-ERECT EXISTING LIGHTING UNIT

Description: This work will consist of the removing, storing and reinstalling an existing street or parking lot lighting units on the same concrete foundation at the locations shown on the plans, as specified herein, or as directed by the Commissioner.

Some of the poles may have to be rotated to orient the mast arm and luminaire because of roadway configuration modifications as shown on the plans. The work to rotate the pole prior to reinstalling it shall be included in this pay item.

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, and in accordance with Department of Electrical Operations Standards and the City of Chicago Electrical Code, except as herein modified.

Inspection and Acceptance. The Contractor shall examine the existing metal light pole, mast arm, luminaire, ballast housing, pole base and all associated components in the presence of the Engineer. After accepting the existing lighting unit and associated equipment, the Contractor shall be held responsible for the preservation of the condition of the lighting unit, as it was at the time of acceptance, until the Final Acceptance Inspection.

Removal: Removal must be in accordance with Article 842.02 and 842.03 of the Standard Specifications.

The lighting unit including pole, mast arm and luminaire, and all associated hardware and appurtenances will be removed from the existing foundation as directed by the Engineer. The existing pole wiring must be disconnected prior to removing the existing lighting unit.

Existing street lighting units to be removed and reinstalled must be disassembled as required for the complete and safe removal with care to prevent damage and stored at the work site.

No removal work shall be permitted without approval from the Engineer. Removal, storage, rotation and re-installation work will include all incidental work and items associated with the equipment as directed by the Commissioner.

Installation. Installation must be in accordance with Articles 821, 830 and 877 of the Standard Specifications and as per CDOT DEO requirements.

The applicable lighting units will be rotated 180 degrees and/or as directed by the Engineer and re-installed on a same concrete foundation. The new pole wiring must be connected to the existing City lighting circuits as directed by the City of Chicago Department of Electrical Operations (DEO) field representative.

The space between the top of the foundation and the base plate of the pole shall be enclosed to prevent entry of rodents in the manner approved by the Engineer.

The anchor rod cover and handhole covers of the lighting unit shall be removed and reinstalled. If during removal, the screws holding the cover break, a hole in the base shall be drilled and threaded to accept a new screw. The screws shall be stainless steel with anti-seize compound applied.

All cable disconnections and reconnections, including any required new cables or splices to make the unit fully operational, will not be paid for separately but will be included in this item at no additional expense.

The contractor shall provide new pole wiring, anchor bolt nuts, washers and spacers/shims. This work will not be paid for separately but will be included in this item at no additional expense.

The pole, mast arm and luminaire must be removed, rotated (if applicable) and reinstalled on the concrete foundation as a single unit

The reflector and lens of the existing luminaire shall be cleaned and a new lamp installed in the existing luminaire prior to re-installation. This work will not be paid for separately but will be included in this item at no additional expense. The new lamp must be in accordance with Article 1067.06 of the Standard Specifications.

Any damage sustained to the mast arm and luminaire during the removal, storage and reinstallation operations shall be repaired, or replaced in kind, Any damage resulting from the removal, rotation and/or reinstallation of the lighting unit and associated hardware, shall be repaired or replaced in kind, to the satisfaction of the Engineer at no additional cost. The Engineer will be the sole judge to determine the extent of damage and the suitability of repair and/or replacement.

Method of Measurement: This work will be measured per each lighting unit removed and reinstalled.

Basis of Payment: This work will be paid for at the Contract Unit Price for each REMOVE AND RE-ERECT EXISTING LIGHTING UNIT, which price will be payment in full for all labor, equipment, materials including all incidental work necessary to complete the work as specified.

ELECTRICAL MANHOLE 3'X 4'X 4' WITH 30" FRAME AND LID (CDOT)

Description. This item will consist of furnishing and installing an electrical manhole of the dimensions indicated with a 30" frame and lid.

Material. The concrete manhole must meet the applicable requirements of Material Specification 1528. The frame and lid must meet the requirements of Material Specification 1458. The 30" frame and lid must meet the requirements of Standard Drawings 874 and 10927. Bricks must meet the requirements of Article 1041 of the Standard Specifications. All other materials used must meet the appropriate material requirements of the Standard Specifications.

Method of Construction. The manhole will be a precast concrete structure, or, if conditions merit, a cast in place concrete structure, complete with cast iron frame and lid. The manhole with a 30" frame and lid must conform to Drawing 729. The number and size of conduit openings will be as shown on the construction plans.

Each manhole will be installed in paved sidewalk, earth parkway, or in pavement at the location specified on the construction plans or at a location as directed by the Resident Engineer.

The area where the manhole is to be placed must be properly excavated. All disposable material will be properly disposed of per Section 202.03 of the Standard Specifications. Each manhole must be set or constructed to conform with the appropriate City of Chicago drawings, except that the number and size of conduit openings will be in accordance with the construction plans. The frame casting must be accurately set on a full bed of mortar to the finished elevation so that no subsequent adjustment will be necessary. Mortar and brick, or mortar and concrete rings, may be used to adjust to the proper grade. Adjustment rings, bricks, and frames must be set in a full mortar bed. Use of partial bricks will not be allowed. Bricks must be laid in full header courses only. In no instance will the neck of the manhole exceed two (2) feet in height. Mortar will be mixed in a proportion of one (1) part cement to three (3) parts sand by volume of dry materials. After entering laterals have been installed in place in the manhole, the openings in the wall must be plugged in an approved manner flush with the inner surface. If backfill is required, screenings must be used and properly compacted. Parkway must be restored to the proper grade. Pavement must be restored to the correct grade. Patching of the pavement must be done with high early strength concrete meeting the requirements of Articles 1001 and 1020 of the Standard Specifications. Sidewalks must be restored to the proper grade using a 5 inch thickness of concrete. The inside of the manhole must be clean of all debris.

Method of Measurement. This item will be measured per each unit installed.

Basis of Payment. The unit price for installing manholes will include necessary excavation, backfilling and restoration of parkway and pavement in accordance with the foregoing specifications. No additional payment will be allowed for restoring parkway or the restoration of sidewalk or pavement. Removal of sidewalk or pavement will be covered by separate pay items. New conduit, if necessary, will also be paid for separately. The unit cost will be for complete installation for each unit for ELECTRICAL MANHOLE 3'X 4'X 4' WITH 30" FRAME AND LID (CDOT).

CLEAN MANHOLE OR HANDHOLE (CDOT)

Description. This item consists of cleaning an existing handhole or manhole for the installation of new conduit(s) and cable(s).

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, and in accordance with Bureau of Electricity Standards and the City of Chicago Electrical Code, except as herein modified.

Installation. Existing cable hooks must be relocated and existing cables must be retrained as required prior to drilling the existing manhole or handhole. Existing and new debris must be removed and disposed of off-site by the Contractor. Existing and new gas and water must be pumped out as directed by the Commissioner. Debris removal, de-gassing and water pumping must be included in this item; separate payment will not be made.

The Contractor must furnish and install cable racks and/or cable hooks for new and existing cables in all manholes and handholes as required to facilitate new cable installation. This Work must be included in this item and separate payment will not be made.

Coordination with ComEd for ComEd handholes or manholes, and coordination with the Bureau of Electricity for city electric handholes or manholes must be performed by the Contractor prior to starting any Work. Coordination must be included in this item; separate or additional payment will not be made.

Drilling the existing manhole or handhole will not be included in this item and will be paid for under a separate pay item.

Method of Measurement. Each manhole or handhole that is cleaned (relocating existing cable hooks, installing new cable hooks, retraining cables, removing debris, and pumping out gas and water) as indicated will be counted as a unit for payment. Each manhole or handhole that is drilled will be measured for payment for cleaning, and will be measured for cleaning only once.

Basis of Payment. This work will be paid for at the contract unit price each for CLEAN MANHOLE OR HANDHOLE (CDOT), which will be payment in full for performing the work described herein.

RACKING CABLES IN MANHOLE OR HANDHOLE (CDOT)

Description. This item consists of providing labor and materials for racking of fiber optic cable in split inner duct and/or traffic signal and lighting copper cable around the inside perimeter of a manhole, in conformance with the Plans. In each manhole, the Contractor shall furnish and install at least four support brackets attached to the manhole walls, on which neatly coiled fiber optic cable in split inner duct and copper cable can be secured. The support brackets shall be attached firmly by screws drilled into the wall. Specific racking layout and components shall be provided in a submittal to the Engineer for each manhole, for review and approval in advance of installation.

In the event that a cable enclosure or other protective treatment of cable is used in place of racking on brackets at the direction of the Engineer, such alternate treatment shall be considered incidental to this pay item.

Method of Measurement. This Work will be measured on a per each basis each for manhole or handhole racked.

Basis of Payment. This Work will be paid for at the contract unit price each per RACKING CABLES IN MANHOLE OR HANDHOLE (CDOT), which will be payment in full for the material and work described herein.

GROUND ROD, 3/4" DIA. X 10.0'-0" LENGTH (CDOT)

Description. This item consists of furnishing, installing, and connecting ground rods for the grounding of service neutral conductors and for supplementing the equipment grounding system via connections at lighting units, manholes, handholes, street lighting controllers, underpass lighting controllers, and traffic signal controllers throughout the system. All materials and Work must be in accordance with Article 250 of the NEC.

Materials. Materials must be according to the following Department of Electrical Operations (DEO) Specifications and Articles of Standard Specifications Section 1000 - Materials:

Item	Requirement
(a) Copper Ground Wire	DEO Specification No. 1440
(b) Ground Rod	DEO Specification No. 1465 and Standard Specifications, Article 1087.01

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, and in accordance with Department of Electrical Operations Standards and the City of Chicago Electrical Code, except as herein modified.

Installation. Ground rods must be driven so that the tops of the rod are 24 inches below finished grade, unless noted otherwise on the Contract Drawings. Where indicated, ground rods must be installed through concrete foundations or manholes. Where ground conditions, such as rock, preclude the installation of the ground rod, the ground rod may be deleted with the prior approval of the Commissioner.

Ground rod connection must be made by approved clamps. Ground wire for connection to foundation steel, or as otherwise indicated, must be stranded uncoated bare copper, in accordance with the applicable requirements of ASTM Designation B-3 and ASTM Designation B-8 and must be included in this item. Unless otherwise indicated, the wire must not be less than No. 8 AWG.

The ground wire must be interconnected to the ground rod, reinforcing steel and anchor bolts at each foundation. All connections to ground rods, structural steel and anchor bolts must be made with approved clamp. Where such connections are made to insulated conductors, the connection must be wrapped with at least 4 layers of electrical tape extended 6 inches onto the conductor insulation.

Method of Measurement. Ground rods will not be paid for separately. Ground wires and connection of ground rods at lighting units, manholes, handholes, controller foundations, and wall mounted controllers will be included in the cost of the item for which it is installed.

Basis of Payment. This work will not be paid for separately, but shall be included in the cost of the item for which it is installed.

DRILL EXISTING MANHOLE OR HANDHOLE CHICAGO

Description. This item consists of core drilling or opening a hole in an existing handhole or manhole for the installation of a new conduit(s).

Materials. Materials must be according to the following Bureau of Electricity (BOE) Specifications and Articles of Standard Specifications Section 1000 - Materials:

	Item	Requirement
(a)	Epoxy Mortar	Standard Specifications, Article 1025.02
(b)	Rigid Nonmetallic Conduit	Standard Specifications, Article 1088.01(b)
(c)	Rigid Steel Conduit	BOE Specification 1462

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, in accordance with ComEd Standards for ComEd handholes or manholes, and in accordance with Bureau of Electricity Standards and the City of Chicago Electrical Code for City electric handholes or manholes, except as herein modified.

Installation. The size of the hole must be as close as possible to the size of the conduit. A conduit stub-out of the size required must be installed in the drilled hole. A bushing must be provided at the end of the conduit. The space between the conduit and the handhole or manhole must be sealed with a waterproof, epoxy mortar. The type and orientation of the conduit must be as shown on the Plans.

If a brick manhole or handhole is found where core drilling is not possible, then the Contractor must break a hole using low impact pneumatic hammers so as to not damage the remaining structure. Conduit openings in the wall must be plugged with mortar. The mortar must seal the conduit openings effectively and as directed by the Commissioner, and must be finished flush with the inner surfaces of the wall.

Coordination with ComEd for ComEd handholes or manholes, and coordination with the Bureau of Electricity for city electric handholes or manholes must be performed by the Contractor prior to starting any Work. Coordination must be included in this item; separate or additional payment will not be made.

Cleaning the existing manhole or handhole will not be included in this item and must be paid for under a separate pay item.

Method of Measurement. Each hole that is drilled for a conduit, or hole that is made for a bank of conduits (drilling the hole, furnishing and installing the conduit(s) and bushing(s), and including all necessary excavation and backfilling outside of the handhole or manhole) as indicated will be counted as a unit for payment.

Basis of Payment. This work will be paid for at the contract unit price each for DRILL EXISTING MANHOLE OR HANDHOLE CHICAGO, which will be payment in full for performing the work described herein.

INTERCEPT EXISTING CONDUIT

Description. This item consists of intercepting an existing conduit or raceway for the purpose of installing a new light tower foundation and making a connection to a new conduit.

General Requirements. Work under this item shall be performed in accordance with Sections 800, 810 and 1088 of the Standard Specifications.

Construction Requirements.

The Contractor shall pull back the existing lighting cables and carefully cut the conduit or raceway so that the cut conduit ends can be installed in the foundation conduit sleeves into the light tower. This item shall include all work necessary to bring the conduit and cables into the foundation. All new conduit required to intercept the existing conduit and make the necessary connections to install the conduit run into the light tower will not be paid for separately and shall be included in this item. The Contractor shall furnish and install all materials for a complete installation.

Method of Measurement. This work will be measured on a per each basis each for conduit end cut.

Basis of Payment. This work will be paid for at the contract unit price per each for INTERCEPT EXISTING CONDUIT, which will be payment in full for the material and work described herein. No additional payment will be allowed for excavation, backfilling, and restoration of a parkway.

REMOVE EXISTING CABLE

Description. This work will consist of disconnecting, removing and disposing of existing cable from a conduit. The cable must be pulled out of an existing conduit, removed completely and disposed as specified herein, as shown on the plans and as directed by the Engineer

The contractor shall coordinate and schedule the cable removal work with the owner prior to beginning any cable removal work.

No removal work shall be permitted without approval from the Engineer. All cables removed as part of this item shall become property of the Contractor and shall be removed from the site, unless otherwise directed.

Method of Measurement. The removed cable will be measured for payment in feet in place, regardless of cable type and size. Measurement will be made in a straight line between changes of direction and to the centers of poles, handholes, junction boxes and manholes. Slack cable and vertical cable will not be measured for payment. Multi-conductor cables within a single outer jacket shall be measured the same as single conductor cables.

Basis of Payment. This work shall be paid for at the contract unit price for REMOVE EXISTING CABLE as specified. The price will be payment in full for completely removing and disposing of the existing cable from a conduit. If two or more cables in a conduit are to be removed, each cable will be measured for payment separately.

ROD AND CLEAN EXISTING CONDUIT

Description. This work will consist of inserting a duct rod or electrical fish rod or tape of sufficient length and rigidity into an electrical conduit opening in one electrical manhole or handhole, and pushing the said rod through the conduit to emerge at the next or subsequent manhole in the conduit system at the location shown on the plans. The duct rod may be inserted and removed by any standard construction method which causes no damage to the conduit system. The size of the conduit may vary from two inch (2") to four inch (4"), but there will be no differentiation in cost for the size of the conduit.

The conduit system which is to be rodded and cleaned may exist with various amounts of standing water in the manholes. The contractor must pump the water or sufficient water from the manholes to drain the conduit and to afford compatible working conditions for the installation of the duct rods and/or cables. The pumping of the manholes will be incidental to the work of rodding and cleaning of the conduit.

Any manhole which, in the opinion of the Resident Engineer contains excessive debris, dirt or other materials to the extent that conduit rodding and cleaning is not feasible, will be cleaned at the Engineer's order and payment approved as a separate pay item, and not a part of this specification.

Prior to removal, of the duct rod, a duct cleaning attachment such as a properly sized wire brush or cleaning mandrel must be attached to the duct rod, which by removal of the duct rod will be pulled through the conduit to remove sand, grit, or other light obstructions from the duct to provide a clean, clear passage for the installation of cable. Whenever the installation of cables is not performed as an adjunct to or immediately following the cleaning of the duct, a light weight pulling line such as a 1/8" polyethylene line or conduit measuring tape must be placed and will remain in the conduit to facilitate future work. When great difficulty of either inserting the duct rod or removal of the cleaning mandrel is encountered, the duct may require further cleaning by use of a compressed air gun, or a low pressure water hose. In the case of a broken duct line, the conduit must be excavated and repaired. The existence and location of breaks in the duct line may be determined by rodding, but the excavation and repair work required will not be a part of this pay item.

Method of Measurement. This work will be measured per lineal foot for each conduit cleaned. Measurements will be made from point to point horizontally. No vertical rises will count in the measurement.

Basis of Payment. This work will be paid for at the contract unit price per lineal foot for ROD AND CLEAN EXISTING CONDUIT for the installation of new electric cables. Such price will include the furnishing of all necessary tools, equipment, and polyethylene line as required to prepare a conduit for the installation of cable. When the number of cables to be installed requires the use of more than one conduit in the same run, each additional conduit required will be rodded and cleaned as a separate unit and paid for at the contract unit price.

POWER DISTRIBUTION CENTER, GROUND MOUNT

Description. This work shall consist of furnishing and installing an aluminum electrical power distribution and meter cabinets complete with electrical devices, foundation and wiring for the distributing single-phase 240/480 volt power from a metered electric utility power source to various IDOT electrical equipment loads.

The work shall also include all equipment required to provide separate, dedicated 120-volt power feeds to an IDOT CCTV camera and Surveillance Cabinet as shown on the plans and as specified herein.

General. The completed power distribution center shall be an Industrial Control Panel under UL 508, and shall be suitable for use as service equipment. All materials shall conform to Article 1068 of the Standard Specifications and as described herein.

Double Door Enclosure.

Cabinet. The cabinet shall have the minimum dimensions of 42 inches long by 22 inches wide by 66 inches in height. The cabinet shall be fabricated from 1/8 in. (3 mm) thick aluminum alloy No. 3003-H14 and be reinforced with aluminum angles and shall comply with ANSI C 33.71 and UL 50 and bear the UL label.

Doors. The doors shall have stainless steel hinges. The door handle shall be stainless steel, a minimum diameter of 1/2 in. (13 mm) and be furnished with a rain and ice resistant lock. The doors shall be gasketed to exclude the entry of moisture, dirt, and insects. A linkage-arm system, of simple construction, shall be attached to the cabinet doors to allow securing in a wide open position during field operations.

Insulation. The interior compartment shall be insulated on the inside of the sides, back, top, bottom, and inside of the doors with 1 in. (25 mm) thick polyisocyanurate rigid foam insulation board. The foam board shall have foil facers on each side. The side facing the interior of the cabinet shall have a white tinted foil facer with a satin finish. The insulation shall have a minimum aged thermal resistance (R-value) of 8 at a 40°F (4°C) mean temperature. The insulation shall comply with Federal Specification HH-I-1972/1, Class 2.

Mounting. The cabinet shall be mounted on a concrete foundation as shown on IDOT Standard BE-205, Sheet 3 of 4.

Finish. All aluminum enclosures shall be finished.

Surface Preparation: The cabinet, doors and all other parts to be painted will be submerged in each tank of a 3 step iron phosphate conversion technique. After phosphatizing the parts shall be passed through an oven and baked to eliminate any moisture.

Finish coat: Shall be polyester powder paint applied electrostatically to a minimum thickness of 2 mils and baked at 375°F for 20 minutes.

The color of the finish paint shall be ANSI Standard No. 70 Sky Gray or as specified by the Engineer.

The finish shall be applied according to the paint manufacturer’s recommendations and the manufacturer shall certify, in writing, to the Department, that the finish has been applied properly.

Submittal data submitted for approval shall address the requirement for the paint manufacturer’s certification and shall include a standard, single source paint warranty by the paint manufacturer of the controller manufacturer to the Department.

Identification. The cabinet door shall have a stainless steel name plate of the dimensions and engraving indicated on the plans. An identification decal shall also be installed on the back of the cabinet as specified elsewhere herein.

Electrical Devices.

Circuit Breakers. The incoming main, branch and auxiliary circuits shall have overcurrent protection. The overcurrent protection shall be by means of circuit breakers.

Circuit breakers shall be standard UL listed molded case, thermal-magnetic bolt-on type circuit breakers with trip free indicating handles.

240 V circuit breakers shall have a UL listed interrupting rating of not less than 10,000 rms symmetrical amperes at rated circuit voltage for which the breaker is applied. 480 V applications shall have a UL listed interrupting rating of not less than 14,000 rms symmetrical amperes at rated circuit voltage.

Multi-pole circuit breakers larger than 100-amp size shall have adjustable magnetic trip settings.

The main circuit breaker shall be a 2-pole, rated at 400 amps.

The number of branch circuit breakers shall be as follows:

- One 275 amp, 2-pole branch circuit breaker for the feed to Lighting Controller 'A'
- One 2-pole, 30 amp branch circuit breaker for the feed to the existing step-down transformer for DMS-7.
- Two 2-pole 20 amp branch circuit breakers (one each) for Surveillance Cabinet B0 and roadway camera ST-01A.
- Two spare 2-pole 20 amp branch circuit breakers.
- One spare 2-pole 30 amp branch circuit breaker.

Ground & Neutral Bus Bars. Separate ground and neutral bus bars shall be provided. The ground bus bar shall be copper, mounted on the equipment panel, fitted with 22 connectors of the type shown on the plans, as a minimum. The neutral bar shall be similar. The heads of connector screws shall be painted white for neutral bar connectors and green for ground bar connectors.

Interior Lighting, Receptacle. The cabinet shall have an auxiliary device circuit at 120-volt single-phase to supply a convenience receptacle and cabinet light. An outdoor dry type step-down transformer not less than 2 KVA shall be provided as described elsewhere herein.

CCTV and Surveillance Cabinet B0 Power. The cabinet shall also have two independent, dedicated, 120-volt, single-phase circuits to supply power to the camera ST-0A and Surveillance Cabinet B0 as indicated in the plans. Outdoor dry type step-down transformers of not less than 2KVA for the camera and 5 KVA for the surveillance cabinet shall be provided for each dedicated circuit as described elsewhere herein.

The auxiliary circuit, including transformer primary and secondary, shall have overcurrent protection according to NEC requirements.

The interior, 60-watt incandescent lighting fixture of the enclosed-and-gasketed type, shall be switched from a single pole, single throw, 20-amp switch. The switch shall be premium specification grade in a suitable 4 in. (100 mm) box with a cover.

A 20-amp duplex receptacle, ground fault interrupting, premium specification grade shall be furnished in a 4 in. (100 mm) square box with cover, for 120-volt auxiliary use.

Surge Arrester. The control circuit in the cabinet shall be protected by a surge arrester meeting the requirements of Article 1065.02.

Wiring and Identification. Power wiring within the cabinet shall be of the size specified for the corresponding service conductors and branch circuits and shall be rated RHH/RHW, 600-volt.

Control and auxiliary circuit wiring shall be rated RHH/RHW or MTW with jacket, 600-volt.

All power and control wiring shall be stranded copper. When specified all wiring shall be tagged with self-sticking cable markers. When the contract drawings do not specifically indicate assigned wire designations, the manufacturer shall assign wire designations and indicate them on the shop drawings.

All switches, controls and the like shall be identified both as to function and position (as applicable) by means of engraved two color nameplates attached with screws.

The cabinet with all of its electrical components and parts shall be assembled in a neat orderly fashion. All of the electrical cables shall be installed in a trim, neat, professional manner. The cables shall be trained in straight horizontal and vertical directions and be parallel, next to, and adjacent to other cables whenever possible.

General Purpose Transformers. The transformers for the 120-volt single-phase circuits shall be dry type and weatherproof so that it may be installed indoors or outdoors without additional housing. They shall have an enclosure for splices with provisions for weather tight conduit connections.

The transformers shall have four taps on the primary side, one at 2 1/2 percent, one at 5 percent, one at 7 1/2 percent and one at ten percent below rated voltage.

Insulation shall be Class F or Class H. The transformers shall meet the applicable ASA and IEEE standards.

Mounting and back plates shall be of Aluminum Alloy 2024, 3003 or 6061. Bolts, nuts and washers shall be of Series 300 stainless steel. Bolts shall have hexheads. Nuts shall be hexagon and self-locking. Washers shall be of the flat type.

Shop Drawing Submittals. The Contractor shall submit show drawings showing the dimensions of the power distribution cabinet enclosure, the descriptions and locations of the associated devices mounted within the cabinet power and wiring diagrams for all components for approval by the IDOT Engineer. Submittal will be reviewed by the Engineer and returned noting changes and/or comments.

Meter Cabinet. Provide a meter cabinet complete with enclosure, meter socket, all wiring and all the necessary devices including, but not limited to, current and voltage transformers required to meter the incoming electrical service. The meter cabinet shall be installed as shown on IDOT Standard BE-205, Sheet 3 of 4. The meter cabinet shall be sized for a 400-amp, 240/480 volt, 1-phase, 3 Wire an incoming service. The cabinet and equipment shall have a 42,000 amp unprotected fault current rating. The cabinet shall be UL labeled, suitable for use as service equipment and must be approved by the electric utility service provider, COMED. The meter cabinet with meter socket shall be as manufactured by ERICKSON ELECTRICAL EQUIPMENT COMPANY model number 1182-3 or approved equal.

Testing and Documentation. The control cabinet shall be tested for complete operation and the electrical load on each circuit shall be measured and documented on the Log form L-3. The ground resistance test shall be performed by the Contractor using the fall-of-potential method, with results recorded by the Contractor and witnessed by the Engineer. Ground continuity shall be tested using an approved low-impedance ohmmeter, to the farthest point of each circuit extension from the controller cabinet. Results shall be recorded by the Contractor and witnessed by the Engineer.

Installation. The power distribution center installation shall be according to the details as described herein, as shown on the plans and as directed by the Engineer.

All conduit entrances into the power distribution center shall be sealed with a pliable waterproof material.

Concrete Foundation. The Contractor shall confirm the orientation of the power distribution center, and its door side, with the Engineer, prior to installing the foundation. A portland cement concrete foundation shall be constructed to the details shown on IDOT Standard BE-205, Sheet 3 of 4 and is included as a part of this pay item and shall not be paid for separately. The top of the foundation shall be 12-inches above grade.

The power distribution center enclosure shall be set plumb and level on the foundation. It shall be fastened to the anchor rods with hot-dipped galvanized or stainless steel nuts and washers. Foundation mounted power distribution centers shall be caulked at the base with silicone.

Where the controller has a metal bottom plate, the plate shall be sealed with a rodent and dust/moisture barrier.

The meter cabinet shall be mounted on the exterior of the power distribution center on the side facing the utility transformer.

Grounding. Grounding shall be in accordance with Article 806 of the Standard Specifications and as shown on the IDOT Standard BE-205, Sheet 3 of 4. Ground rods, ground wells, connections, ground wire and other associated items shall be included in the cost the power distribution center and shall not be paid for separately."

Method Of Measurement. Each power distribution center shall be counted each for payment.

Basis Of Payment. This item shall be paid for at the contract unit price each for POWER DISTRIBUTION CENTER, GROUND MOUNT, which shall be payment in full for the work, complete, as specified herein.

BOLLARDS

Description: This work shall consist of furnishing and installing bollards with concrete footings as shown on the Plans and as directed by the Engineer.

General: The bollards shall be constructed of concrete filled schedule 80 steel pipe.

The Portland cement concrete used for the bollard footings and to fill the inside of the pipe shall be in accordance with Article 1020 of the Standard Specifications. Grout installed for the top "cap" of the pipe shall be in accordance with Article 1020 of the Standard Specifications.

The steel reinforcement bars installed for the footings shall be in accordance with Article 1006.10(a) of the Standard Specifications.

The bollard footings shall be the drilled shaft type and shall be constructed according to Section 516. The submittal requirements as stated in Article 516.04 shall not apply.

The bollards shall be painted with one coat of primer and two coats of yellow paint. Cleaning of the painting surfaces shall be in accordance with Article 851.03 of the Standard Specifications.

Method of Measurement: Each bollard installed with a concrete footing will be measured for payment.

Basis of Payment: This work will be paid for at the Contract unit price each for BOLLARDS.

HEAVY-DUTY HANDHOLE (SPECIAL)

Description. This item consists of furnishing and installing or constructing a heavy duty handhole with a heavy duty frame and lid in McCormick Place Parking 24th Street Lot or in the sidewalk adjacent to the parking lot as shown on the plans, as required by McCormick Place Expansion Authority (MPEA) and as directed by the Engineer.

General Requirements. Work under this item shall be performed in accordance with Section 814 of the Standard Specifications and/or as required by the MPEA.

Construction Requirements.
The Contractor shall locate the handhole at the optimum location to intercept the lighting circuits and re-route them as shown on the plans. The existing cables shall be pulled back and the conduit or raceway carefully cut so that the cut conduit ends can be routed into the handhole. This item shall include all work necessary to bring the conduit and cables into the handhole.

All new conduit required to intercept the existing conduit and make the necessary connections to install the conduit run into the handhole will not be paid for separately and shall be included in this item. The Contractor shall furnish and install all materials for a complete installation.

Basis of Payment. This work will be paid for at the contract unit price per each for HEAVY-DUTY HANDHOLE (SPECIAL), which will be payment in full for the material and work described herein. No additional payment will be allowed for excavation, backfilling, and restoration of the pavement or sidewalk.

CONCRETE FOUNDATION (SPECIAL)

Description. This item consists of constructing or furnishing and installing a concrete foundation for a McCormick Place Expansion Authority (MPEA) parking lot light pole as shown on the plans, as required by MPEA and as directed by the Engineer.

General Requirements. Work under this item shall be performed in accordance with Sections 836 of the Standard Specifications and as required by MPEA.

Construction Requirements.
The concrete foundation shall be installed according to Article 836.03(a) of the Standard Specifications. The Contractor shall install the concrete foundation at the locations shown on the plans and as directed by MPEA and the Engineer. The Contractor shall furnish and install all materials required for a complete installation.

Method of Measurement. This work will be measured on a per each basis each for concrete foundation installed.

Relocation of a foundation due to an obstruction and any shaft material excavation to the point will not be measured for payment.

Excavation in rock will be measured for payment according to Article 502.12.

Basis of Payment. This work will be paid for at the contract unit price per each for CONCRETE FOUNDATION (SPECIAL), which will be payment in full for the material and work described herein.

Payment will be made for foundations installed in place, including elbows, in accordance with the plans and these specifications. All necessary excavation and restoration of the pavement, sidewalk and fill to their original conditions will be included in the unit price for this item.

CONCRETE FOUNDATION, 24" DIAMETER, 1 1/4" ANCHOR RODS, 15" BOLT CIRCLE, 7 FEET (CDOT)

Description. The foundation will be a poured in place concrete structure used for structurally supporting street light poles or traffic signal poles.

Material. Concrete must be Portland cement concrete meeting the requirements of Article 1020 of the Standard Specifications for SI Class concrete. Reinforcement bars must meet the requirements of Section 1006.10 of the Standard Specifications. Anchor rods must meet the requirements of Material Specification 1467 and the ground rod must meet the requirements of Material Specification 1465. Conduit elbows must be PVC conduit meeting the requirements of Material Specification 1533.

Construction. Every foundation will be installed at the location designated and in the manner herein specified or in special cases as specifically directed. The contractor will locate foundations as per plan or as directed by the Resident Engineer. A hole must be augered for placement of the concrete form.

CONCRETE FOUNDATION, 24" DIAMETER, 1 1/4" ANCHOR RODS, 15" BOLT CIRCLE, 7 FEET (CDOT) is a foundation for arterial street light pole; either steel or aluminum, conventional or davit (Standard Drawing 818).

Top surface of these foundations in parkway will be at an elevation of two inches (2") above grade or as required by the Engineer. Care must be taken to install a level foundation and to ensure adequate anchor rod projections for double nut installation. The foundations must be centered back from the face of the curb in accordance with dimensions shown on the construction plans. Foundation raceways must consist of large radius conduit elbow(s) in quantity, size and type as specified on the corresponding standard drawing or in the construction plans. Any number of elbows in excess of the number shown on the standard drawing must be paid for under a separate pay item. The elbow ends above ground will be capped with standard conduit bushings. The Contractor must furnish anchor rods, a ground rod, hardware, conduit elbow(s) and all other material shown on applicable foundation construction drawings. Depth of foundation will be as shown on the appropriate drawing. The foundation top must be chamfered 3/4 of an inch. When the foundation is installed in a sidewalk, the foundation must be installed level, with the height of the foundation as close to the height of the sidewalk as possible, or as directed by the Engineer. A proper expansion joint will be installed between the sidewalk and the foundation.

Anchor rods must be set in accordance with applicable construction plans so that when poles are mounted on the foundations, the street lighting mast arm will be properly oriented as indicated on the construction plans. The anchor rods will be set by means of a metal template which shall be submitted for approval before any foundation work is begun. The template must hold the rods vertical, and in proper position. Anchor rods must conform in all respects to the appropriate drawing.

Method of Measurement. This item will be measured per each foundation installed complete.

Basis of Payment. This work will be paid for at the contract unit price per each for CONCRETE FOUNDATION of the diameter and size specified.

Payment will be made for foundations installed in place, including elbows, in accordance with construction drawings, constructions plans and these specifications. All necessary excavation and restoration of pavement, sidewalk and fill to their original conditions will be included in the unit price for this item.

CABLE IN CONDUIT, TRIPLEX 2-1/C NO. 6 AND 1-1/C NO. 8 GROUND

Description. This work will consist of furnishing and installing electric cable that is triplexed. The cable must be rated at 600 volts and must consist of two number 6 conductors and one number 8 conductor. The cable will be installed in conduit underground.

Material. The cable must meet all requirements of Material Specification 1534 of the Bureau of Electricity, City of Chicago.

Construction Method. All cables must be installed with care to prevent damage to the cable. Any defects found in the cable must be reported to the resident engineer. Damaged cable must be replaced.

The cable must be pulled into the conduit with a minimum of dragging on the ground or pavement. This will be accomplished by means of reels mounted on jacks or other suitable devices located for unreeling cable directly into duct. Lubricants must be used to facilitate installation if deemed necessary by the contractor.

Bends in the cable will conform to the recommended minimum radii as outlined in the National Electric Code.

Cable passing through manholes must be trained and racked around the sides of the manhole into a permanent position. If racks are non-existent or in poor condition, the contractor must install racks. The material must be approved by the resident engineer. Any material and labor involved in training and racking the cable will be considered incidental to the cost of this pay item.

Where cable runs continue from manhole to manhole without tapping within a light pole, they will be continuous without splices unless authorized by the resident engineer.

The cable installation must be color coded so that each lead of all circuits may be easily identified and lighting units connected to the proper leg as indicated on the plans. The equipment grounding conductor (no. 8) must be color coded green.

All wire or cable in the distribution panels and control cabinets must be properly trained and have sufficient slack provided for any rearrangement of equipment or future additions.

There must be at least three feet of slack in a street light pole base or street light controller base. A handhole must have at least five feet of slack and a manhole at least ten feet of slack.

Method of Measurement. The length of triplex cable furnished and installed will be measured as the length of conduit plus three feet for cable entering and leaving a light pole or street light control cabinet, plus any slack in manholes or handholes.

Basis of Payment. This work shall be paid for at the contract unit price per lineal foot for CABLE IN CONDUIT, TRIPLEX, 2 1/C NO.6 AND 1-1/C NO.8. GROUND The price will be payment in full for furnishing, installing, and testing the cable, and will include all material, labor, terminations, and incidentals necessary to complete the work as per the contract plans.

REMOVING MANHOLES, SPECIAL

Description. This work will consist of completely breaking down and removing an existing manhole and filling in the affected area to grade or as directed by the Engineer.

Definition. This work will consist of removing the frame and cover of the existing manhole, breaking down the manhole walls, removing the debris and backfilling the hole with screenings or other approved material. Backfill must be installed in 6 inch layers and tamped. If the manhole is in pavement, the pavement will be restored under a different pay item. If the frame or cover is deemed re-useable by the Engineer, the frame and/or cover must be delivered to the owner at a location identified by the Engineer. Any debris, including the frame and cover must be disposed of off-sight in an approved manner. The contractor will pay for all disposal fees.

Method of Measurement. This work shall be paid for per each manhole removed. All backfill will be considered as part of this manhole removal pay item.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVING MANHOLES, SPECIAL which price will be payment in full for all labor and materials necessary to complete the work as described. Salvaging of the frame and cover will be considered incidental to this item.

REMOVE TEMPORARY WOOD POLE

Description. This item consists of removing existing temporary wood poles, aerial cable, and all associated apparatus and connections. This removal shall also include removal of all wiring and connections back to the associated lighting controller. All equipment and material removed as part of this item shall become property of the Contractor and shall be removed from the site.

Pole holes shall be backfilled according to Article 819.04.

Method of Measurement. Units measured for payment will be counted on a per-pole basis, regardless of pole material, pole dimensions and installation depth.

Basis of Payment. This work will be paid for at the Contract unit price each for REMOVE TEMPORARY WOOD POLE.

TRAFFIC SURVEILLANCE. – GENERAL (TSC T 400#02)
Effective: June 1, 1994 Revised: July 21, 2011

1.0 The following supplements applicable sections of Section 800 of the Standard Specifications for Road and Bridge Construction.

The intent of this Special Provision is to prescribe the materials and construction methods commonly used in traffic surveillance 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.

When the road is open to traffic, except as otherwise provided, the Contractor may request a turn on and inspection of all complete traffic surveillance installations system. This request must be made to the Engineer a minimum of seven (7) working days prior to the time of the requested inspection. Upon demonstration that all surveillance is operational and all work is completed in accordance with the contract and to the satisfaction of the Bureau of Traffic Operations Electrical Engineer, The Bureau of Traffic Operations Electrical Engineer will then allow all of the surveillance to be placed in continuous operation. The Agency that is responsible for the maintenance of the traffic surveillance installations will assume the maintenance upon successful completion of this inspection.

Projects which call for the storage and re-use of existing traffic surveillance equipment shall have a 30 day test period prior to project acceptance.

1.1 DEFINITION OF TERMS.

Whenever in these Special Provisions the following terms are used, the intent and meaning shall be interpreted as follows:

Induction Loop - A continuous non-spliced wire, three turns, permanently placed and sealed in sawcuts in the roadway and adjacent area, used in conjunction with an induction loop detector sensor unit.

State Highway Communications Center - The main communication control facility of the Illinois Department of Transportation with present offices at 201 W. Center Court, Schaumburg, Illinois 60196-1096.

1.2 PROSECUTION OF SURVEILLANCE WORK.

The work shall be as indicated on the Plans and as required by the Specifications. Unless otherwise indicated, the Contractor shall furnish and install all required materials and equipment, including all associated appurtenances, to produce a complete and operational installation. The appurtenances shall be as indicated, and the costs shall be included in the unit prices bid for the pay items of this contract. The work shall be done in a workmanlike manner.

1.3 CONNECTIONS TO EXISTING INSTALLATIONS.

Where new work connects to existing installations, the Contractor shall do all necessary cutting, fitting and foundation drilling to the existing installation and shall remove all existing work, as required, to make satisfactory connections, with the work to be performed under these Provisions, so as to leave the entire work in a finished and workmanlike manner, as approved by the Bureau of Traffic Operations Electrical Engineer. No raceways shall be allowed to enter cabinet through the sides or back walls.

Some contracted work which does not call for a complete rebuilding of a surveillance location but the replacement of detector loops and lead-in cable only in conjunction with work such as pavement overlay, cut and grind, curb and gutter replacement and other similar type work where existing appurtenances have been in place for several years. This at times has created pre-existing conditions (such as blocked/broken lead-in conduits, buried handholes) which the contractor may have to repair/replace to make the location fully functioning. The Contractor will be compensated for such work utilizing contract items after a complete inspection by the Bureau of Traffic Operations Electrical Engineer, Resident Engineer and Electrical Maintenance Contractor's Rep. with a full review on a case by case basis. Upon completing such work the Contractor shall notify the R.E. to contact the Bureau of Traffic Operations Electrical Engineer for checks and test to insure the location is on-line and working correctly.

The Contractor shall furnish all labor and material to the furtherance of this end, whether or not distinctly shown on the plans, in any of the "Standard Specifications" or in the Special Provisions.

Note that the Contractor shall be entitled to only one request for location marking of existing systems by the Electrical Maintenance Contractor and that multiple requests may only be honored at the Contractor's expense.

1.4 STANDARD GUARANTEE.

Manufacturers' warranties or guarantees on all electrical and mechanical equipment consistent with those provided as customary trade practice shall be obtained and transferred to the State.

1.5 IN-SERVICE WARRANTIES OR GUARANTEES.

The Contractor shall provide warranties or guarantees that will provide for satisfactory in-service operation of the mechanical and electrical equipment and related components. These warranties or guarantees shall cover a period of two (2) years following project acceptance. The cost of these warranties and guarantees shall be considered incidental to the Contract.

1.6 EQUIPMENT DOCUMENTS.

The Contractor shall furnish five (5) diagrams of the internal and external connection of the equipment in each Bureau of Traffic Operations Electrical cabinet. Contractor shall also furnish the Operating and maintenance instructions for all equipment supplied. One copy of the wiring diagrams for each cabinet shall be retained in each field cabinet. A wiring diagram shall be contained in a plastic pouch that shall be permanently mounted to the door of each cabinet. Contractor shall permanently mark the cabinet for each termination and each terminal connection as to loop, tone, closure, phone, and lane function of each termination in the cabinet and provide a completed cable log and location as-built diagram at each location.

1.7 TERMINAL BLOCKS.

Terminal blocks provided in field cabinets shall be the heavy duty barrier type. The terminal block shall be a minimum of 2 inches (50.8 mm) wide and 1-3/16 inch (30.16 mm) deep. Center to center of the terminal screws or studs shall be a minimum of 21/32 inch (16.67 mm) with barriers in between. Terminal blocks shall be rated at 45 amps 600 volts breakdown RMS line to line 11,000 V. and breakdown RMS line to ground 13,800 V. A marking strip shall be provided with each terminal block.

1.8 EXISTING EQUIPMENT.

All existing equipment, replaced by new equipment shall remain the property of the State and shall be delivered to the Electrical Maintenance Contractor. The cost of removing and delivering the replaced equipment shall be paid for under separate pay item for Cabinet Housing Equipment - Removal.

1.9 TELECOMMUNICATION CABLE.

When installing the telecommunication cable, the Contractor shall extend his installation and connections of the cable to the next adjacent Surveillance installations or junction box, beyond the limits of his contract section. He shall be responsible for insuring that the cable is continuous and connected from one contract section to the other.

The Contractor shall comply with the agreement between the State of Illinois and IBT/Ameritech as to connections, locations, and terminations of the phone lines (Telephone Company, Engineering, General Service Engineering Division, Outside Plant Engineering Notes 14-36A., March 1971, Administrative Aids and Procedures).

1.10 EXISTING SURVEILLANCE EQUIPMENT AND APPURTENANCES.

Before starting work, the Contractor, in the presence of the Resident Engineer, Bureau of Traffic Operations Electrical Engineer and the State Electrical Maintenance Contractor's rep., shall inspect the existing equipment to be delivered or maintained by the Contractor and shall take an inventory of all defective, broken, and/or missing parts. Those parts found broken, defective, and/or missing shall be repaired or replaced by the State Electrical Maintenance contractor and shall be recorded as such. The Contractor shall be required to maintain all tone transmitters, tone receivers, tone power supplies, tone mounting frames, harnesses, controller and wiring. The Contractor shall be required to maintain all metering and surveillance cabinets, foundation, concrete handhole, vehicle detection equipment, all interconnecting cables and all Surveillance appurtenances including signal heads. Contractor shall number each cabinet as indicated on the plans, with reflective decals as those used on lighting pole standard.

Should damage occur to any surveillance items during the Contractor's contract period, the Contractor shall repair or replace all damaged equipment at his own expense. The Bureau of Traffic Operations Electrical Engineer shall determine what equipment shall be reusable and what shall be replaced. Replaced equipment shall be of equal or better quality and type.

The Contractor, prior to the commencement of his work, shall notify the Bureau of Traffic Operations Electrical Engineer for a pre-construction inspection. If construction begins prior to this meeting, the Contractor assumes maintenance responsibilities of the locations within his contract limits and shall make any repairs or replace any damaged equipment pre-existing or damaged as a result of his own negligence at his own expense. This also relieves the Electrical Maintenance Contractor of providing one free locate of the surveillance installations within the contract limits.

1.11 AS-BUILT PLANS.

Upon completion of the work, the Contractor shall furnish one (1) copy of “as-built” drawings on CD compatible with Micro Station V8-2004 Edition software at the Bureau of Traffic Operations Electrical Design Section and four (4) full size sets of "as-built" plans to the Resident Engineer. The plans shall include definite locations and length of all cables, duct, conduit pushes, induction loop, lead-in, foundations, handhole and P-duct. The cost of the "as-built" plans shall be incidental to the contract. The Engineer will not authorize final inspection of any installations until the said plans are in his possession.

1.12 PROTECTION OF THE WORK.

Electrical work, equipment and appurtenances shall be protected from damage during construction until final acceptance. Electrical raceway or duct openings, shall be capped or sealed from the entrance of water and dirt. Wiring shall be protected from mechanical injury.

1.13 STANDARDS OF INSTALLATION.

Electrical work shall be installed in a neat and workmanlike manner in accordance with the best practices of the trade. Unless otherwise indicated, materials and equipment shall be installed in accordance with the manufacturer's recommendations.

Except as specified elsewhere herein, materials and equipment shall be in conformance with the requirements of Section 800 & 1088 of the Standard Specifications for Road and Bridge Construction.

In addition to the requirements of the Standard Specifications relating to control of materials, the Contractor shall comply with the following requirements.

The Contractor shall supply samples of all wire, cable, and equipment and shall make up and supply samples of each type of cable splice proposed for use in the work for the Engineer's approval.

Before equipment and/or material including cabinet, telemetry, and detectors 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. Re-manufactured or modified equipment other than by the original manufacturer shall not be allowed. Original manufacturer shall certify that he made modification to the equipment.

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 equipment are paid, and no additional materials and equipment are paid, and no additional compensation will be allowed. Materials and 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.

1.14 PROCUREMENT.

Materials and equipment shall be the products of established manufacturers, shall be new, and suitable for the service required. The Contractor is obligated to conduct his own search into the timely availability of the specified equipment and to ensure that all materials and equipment are in strict conformance with the contract documents. Materials or equipment items which are similar or identical shall be the product of the same manufacturer. The cost of submittals, certifications, any required samples and similar costs shall not be paid for extra but shall be included into the pay item bid price for the respective material or work.

1.15 EXCEPTIONS, DEVIATIONS AND SUBSTITUTIONS.

Exceptions to and deviations from the requirements of the Contract Documents shall not be allowed without approval by Engineer and Bureau of Traffic Operations Electrical Engineer. 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 substitutions shall be permitted without the approval of the Engineer, and Bureau of Traffic Operations Electrical Engineer.

1.16 SUBMITTALS.

Within 30 days after contract award, the Contractor shall submit, for approval, complete manufacturer's product data (for standard products and components) and detailed shop drawings (for fabricated equipment). All of the submittal information shall be assembled by the Contractor and submitted to the Engineer at one time. All equipment samples shall be submitted at this time. Partial and sporadic submittals may be returned without review. The Contractor may request, in writing, permission to make a partial submittal. The Engineer will evaluate the circumstances of the request and may accept to review such a partial submittal. However, no additional compensation or extension of time shall be allowed for extra costs or delays incurred due to partial or late submittals.

1.17 TESTING.

Before final acceptance, the electrical equipment, material, induction loops and work provided under this contract shall be tested. Tests will not be made progressively, as parts of the work are completed they shall be all made at one time. Items which fail to test satisfactorily shall be repaired or replaced. Bureau of Traffic Operations Electrical Engineer will witness all testing.

1.18 INSTALLATION/INSPECTION PROCEDURES.

After all control boxes and equipment to be installed has been physically inspected and approved by Bureau of Traffic Operations Electrical Engineer, the equipment supplier shall then deliver all equipment to the job site. The Contractor shall then install/safeguard all the equipment which has been delivered prior to requesting an inspection. No unapproved equipment shall be on the job site or installed as part of the job. This does not relieve the Contractor from replacement/repairs of equipment found to be damaged or in non-compliance of these provisions.

Certain items such as conduit, wire, duct, anchor bolts, and junction boxes will be inspected and may be tested by the Department's Bureau of Materials and these items shall not be delivered to the job site without inspection approval. Items such as cabinets shall be inspected by the Engineer at the contractor's or manufacturer's shop and these items shall not be delivered to the job site without Bureau of Traffic Operations Electrical Engineer inspection approval. It shall be the Contractor's responsibility to arrange inspection activities with the Engineer thirty (30) days prior to installation. 30 days prior to installation of the tone equipment being supplied and, prior to request for a turn-on, the Bureau of Traffic Operations Electrical Engineer will be contacted for the correct frequencies, controller addresses and "DB" setting for each location to be installed. When the work is complete, all equipment fully operational, the Contractor shall schedule a turn-on inspection with the Engineer. Acceptance will be made as a total system, not as parts. The Contractor shall request the inspection no less than seven (7) working days prior to the desired inspection date.

No inspection shall be made until the delivery of acceptable "as built" drawings, specified certifications, and the required guarantees.

It will be the responsibility of the installing contractor to provide a qualified technician representing the tone equipment supplier to be at the turn-on inspection of each location to provide the technical expertise to bring each location on line.

The Contractor shall furnish the necessary manpower and equipment to make the Inspection. The Engineer may designate the type of equipment required for the inspection tests.

A written record of the loop analyzer readings shall be submitted to the Bureau of Traffic Operations Electrical Engineer prior to the final inspection.

Any part or parts of the installation that are missing, broken, defective, or not functioning properly during the inspection shall be noted and shall be adjusted, repaired, or replaced as directed by the Engineer and another inspection shall be made at another date. Only upon satisfaction of all points shall the installation be acceptable.

After the subject inspections are completed the Bureau of Traffic Operations Electrical Engineer will provide the contractor with a complete punch list of items necessary to be completed prior to final inspection and acceptance for maintenance.

The Contractor shall furnish a written guarantee for all materials, equipment and work performed under the contract for a period of not less than two (2) years from the date of final acceptance.

MAINTAINING ITS DURING CONSTRUCTION

Description. Intelligent Transportation Systems (ITS) references IDOT traffic surveillance infrastructure. These elements include, but are not limited to, the following: induction loops, ramp meters, closed circuit television cameras, dynamic message signs, highway advisory radios, Radar Vehicle Sensing Devices (RVSDs), copper and fiber optic communication cables, power cables, cabinets, and communication equipment.

General Requirements. Effective the date the Contractor's activities (ITS or otherwise) begin at the job site, the Contractor shall be responsible for the proper operation and maintenance of ITS elements that are part of, or that may be affected by, the work until final acceptance by the Engineer or as otherwise determined by the Engineer.

Before performing any excavation, removal, or installation work (ITS or otherwise) at the site, the Contractor shall initiate a request for a maintenance transfer and preconstruction inspection to be held in the presence of the Engineer and a representative of the party or parties responsible for maintenance of any ITS systems that may be affected by the work. This includes co-ordination with adjacent projects that may have an effect on the ITS infrastructure. The request for the maintenance preconstruction inspection shall be made no less than seven (7) calendar days prior to the desired inspection date.

Existing ITS elements, when depicted on the plans, are intended only to indicate the general equipment installation of the systems involved and shall not be construed as an exact representation of the field conditions. It remains the Contractor's responsibility to visit the site to confirm and ascertain the exact condition and location of the ITS components and systems to be maintained and installed.

Existing ITS components shall be defined as any ITS component or device in service at the time of the commencement of construction activities. The contract drawings indicate the general extent of any existing ITS elements, but whether indicated or not, it remains the Contractor's responsibility to ascertain the extent of effort required for compliance with these specifications, and failure to do so will not be justification for extra payment or reduced responsibilities.

Maintaining ITS During Construction - It is the Contractor's responsibility to maintain vehicle detection, which includes speed and volume data, in all lanes within the construction limits for this project, on all roadway segments and ramps that will be open to traffic. Where the existing detection or metering cannot be maintained, the Contractor shall provide a temporary detection system, approved by IDOT, at no additional cost to the contract. The Contractor's responsibility shall include protection or removal and storage of any ITS/Communication cabinets and protecting in place any cables, conduits and ITS devices in or adjacent to the work zone. This work may also include the abandonment of the existing device and communication pathway and the installation of a temporary device such as a RVSD with a wireless communication.

The Contractor is responsible for the disconnection, rerouting, and reconnection of all fiber and copper communication cables currently located in existing conduits as indicated in the plans. The disconnection and reconnection must be made at an existing splice point or communication cabinet where a connection is made, or as otherwise indicated in the plans. The existing communication and infrastructure must be properly maintained for the duration of construction activities and the Contractor must coordinate the disconnection and reconnection activities with the Engineer.

All work required to maintain, relocate or provide temporary ITS infrastructure as depicted in the plans or otherwise necessary and as provided for in this special provision shall be paid for under the Maintaining ITS During Construction pay item. No component items germane to this work shall be paid for separately.

Once construction activities are complete, all temporary equipment installed will become the property of the Department and shall remain in place, except where a proposed location has been identified in the plans. All final locations and installations of ITS devices, communication cabinets, junction boxes, conduit, fiber optic, copper cable, wireless equipment and associated infrastructure shall be protected, secured and have the Engineer's approval. Proper documentation, to include latitude and longitude for all equipment locations and communication pathway must be turned over to the Department. The proposed plan for this work must be presented to the Engineer for approval prior to the commencement of the work.

Method of Measurement. The contractor shall demonstrate to the satisfaction of the Engineer that the ITS components, devices and infrastructure have been properly installed, protected and maintained and that the appropriate data is being transmitted to the Traffic Management Center prior to submitting a pay request. In order for final payment to be released the contractor must demonstrate that the equipment is working as intended following inspection by the Engineer. Failure to do so will be grounds for denying the pay request.

Basis of Payment. Maintaining ITS During Construction and Rerouting ITS Communication shall be paid for at the contract unit price per calendar month (Cal Mo) for MAINTAINING ITS DURING CONSTRUCTION, which shall include all work as described herein.

REMOVE EXISTING TRAFFIC SURVEILLANCE EQUIPMENT

Description: This work shall consist of the removal and disposal of existing traffic surveillance equipment and their foundations.

General Requirements: No removal work will be permitted without approval from the Engineer. Removal shall start as soon as the temporary ITS or permanent ITS, as applicable, is placed in approved operation. An inspection and approval by the Engineer will take place before any associate proposed permanent or temporary ITS is approved for operation.

Removal of Traffic Surveillance Equipment: Any damage resulting from the removal and/or transportation of the Traffic Surveillance Equipment and associated hardware, shall be repaired or replaced in kind. The Engineer will be the sole judge to determine the extent of damage and the suitability of repair and/or replacement.

Abandoned underground Traffic Surveillance cables shall be removed with conduit to a depth of 1 ft (300 mm) below ground level and the hole shall be backfilled.

Conduit hangers, straps, and supports shall be removed from bridge steel as directed by the Engineer. Where the conduit system is removed from parapet walls and other concrete surfaces, the Contractor shall cut off the anchor device 1 in. (25 mm) below the surface of the concrete, and fill all voids with portland cement concrete mortar, making a smooth finish to the concrete surface.

Unprotected bridge steel which is exposed by the removal of the conduit system shall be touched up using a paint and procedure approved by the Engineer.

(a) Removal of Traffic Surveillance Equipment, No Salvage. When indicated, Traffic Surveillance Equipment and all associated hardware and appurtenances shall become the property of the Contractor and shall be disposed of according to Article 202.03.

(b) Removal of Traffic Surveillance Equipment, Salvage. When indicated, Traffic Surveillance Equipment, and all associated hardware and appurtenances shall remain the property of the Department and shall be delivered to a Department facility within the District and unloaded and stacked there, as directed by the Engineer. Wood blocking, banding, or other appurtenant items required for proper stacking and protection shall be included.

Traffic Surveillance Equipment shall be removed, boxed in new containers, approved by the Engineer, and delivered to a Department facility, as designated by the Engineer. The contractor is responsible for paying for the shipping of Traffic Surveillance Equipment included in this special provision and will not be paid separately for shipping costs.

Removal of Traffic Surveillance Equipment Foundation: Concrete foundations shall be removed to at least 2 ft (600 mm) below grade, with removed material disposed of according to Article 202.03. The removal shall extend deeper where required to facilitate roadway construction at no additional cost to the Department. Underground conduits and cables shall be separated from the foundation at 2.5 ft (750 mm) below grade and shall be abandoned or re-used as indicated.

The void caused by the removal of the foundations shall be backfilled according to Article 841.02.

Basis of Payment: Removal of existing Traffic Surveillance Equipment shall be paid for at the contract LUMP SUM (L SUM) price.

OPERATION OF EXISTING TRAFFIC SURVEILLANCE/SPEED/COUNT STATIONS (TSC T400#03)
Effective: June 1, 1994
Revised: November 12, 2008

Existing traffic surveillance installations and/or any electrical facilities at certain locations included in this Section may be altered or reconstructed totally or partially as part of the work on this Section. The Contractor is hereby advised that all traffic surveillance equipment, presently installed at these locations, is the property of the State of Illinois, Department of Transportation, Division of Highways or Springfield Bureau of Traffic.

The Contractor is further advised that the existing traffic surveillance or the existing speed/data installations, must remain in operation during all construction stages except for the most essential down time. Any shutdown of the installation, for a period to exceed four (4) hours 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 2:00 p.m. on weekdays. Any other traffic shutdown, either for periods in excess of one (1) hour or outside of the 10:00 a.m. to 2:00 p.m. weekday period must have prior approval of the Engineer.

The Contractor, prior to the commencement of his work, shall notify the State's Electrical Maintenance Contractor and the Bureau of Traffic Operations of his intent to perform this work. Failure to notify either the Bureau/EMC when starting work will cause maintenance to be transferred to the Contractor without pre-inspection and will require the Contractor to complete all repairs without compensation. This also relieves the EMC from providing a locate without compensation. Upon request from the Contractor, the State Electrical Maintenance Contractor will locate any buried conduit or other electrical facility which may interfere with the Contractor's operations without charge to him. This shall in no way relieve the Contractor of his responsibility to repair and/or replace electrical facilities damaged by his operations.

Note that the Contractor shall be entitled to only one request for location marking of existing systems and that multiple requests may only be honored at the Contractor's expense.

Any known or suspected damage to the electrical facility shall be reported immediately to the Engineer. The Contractor will be held fully responsible for the repair and/or replacement of any part of the existing installation, whether permanent or temporary, if, in sole opinion of the Engineer, such damage was caused by the negligence of the Contractor, his agents, or employees. The State, at its own discretion, may call upon the State's Electrical Maintenance Contractor or the concerned bureau to make any such repairs and/or replacements at the total expense of the Contractor for this Section.

PREFORMED INDUCTION LOOP EMBEDDED IN NEW CONCRETE PAVEMENT (TSC T418#2)
Effective: Feb. 11, 1997
Revised: October 8, 2008

1. DESCRIPTION

This item shall consist of furnishing, installing and testing an induction loop, of the dimensions shown on the plans or of the dimensions from Table 1, at the locations shown. The induction loop shall be installed in accordance with all details shown on the plans and applicable portions of Section Art.886 of the Standard Specifications for Road and Bridge Construction. All cable installation, lead-ins and testing necessary to complete the installation shall conform with the following requirements.

2. MATERIALS

The cable used for induction loop shall be #14-19 strand XHHW XLP-600V, encased in a 3/8” (9.5mm) synthetic cord reinforced hydraulic hose with a 250 psi (17576.75 Grams/sq cm) internal pressure rating as manufactured by Goodyear Tire & Rubber or comparable. All loop wire shall be UL listed. Lead-ins shall be Canoga 30003 or equal cable. The jacket of high density polyethylene shall be rated to 600 volts in accordance with UL 83 Section 36.

Preformed detector loops shall be factory assembled. Hose for the loop 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 loops. This will provide maximum wire protection and loop system strength. Hose tee connections shall be 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 #14 XHHW stranded copper. The number of turns in the loop shall be application specific. No wire splices will be allowed in the preformed loop assembly.

The loops shall be filled and sealed with a flexible sealant to insure complete moisture blockage and further protect the wire.

Loops and wire shall be custom marked as necessary for the job.

3. INSTALLATION DETAILS

These preformed induction loops shall be installed in new concrete pavement at the location shown on the plans or as directed by the Engineer. The loops shall be installed at such a time that the loop can be secured to the reinforcement bars to prevent movement during concrete pour. The induction loop shall have a minimum of 2 inches (50mm) of concrete cover at all points.

The reinforced hose shall be fed through a 2 in (50mm) galvanized steel conduit to a heavy duty handhole (See TY-1TSC-418#10 and TY-1TS-418#19). The hose shall extend a minimum of 1.8 meters (6 feet) into the HDHH.

For loops in bridge decks, the reinforced hose shall extend a minimum of 6 feet (1.8 meters) beyond the forms for the bridge deck pour. Extra care shall be taken when the forms are stripped to insure that no damage is done to the loop. A 10" X 8" X 4" (254mm X 203.2mm X 101.6mm) stainless steel junction box, minimum, shall be used to house the splice for the induction loop. This stainless steel junction box shall be attached where the loop hose passes out of the bridge deck. The stainless steel junction box shall not be considered incidental but shall be paid for separately as 10" X 8" X 4" (254mm X 203.2mm X 101.6mm) stainless steel junction box attached to structure. Enough loop wire and lead-in shall be coiled in the SS Junction Box to permit the splice to be removed, worked on, and replaced.

Where there are continuous count stations in the new concrete pavement, the loops from inside lane to outside lane shall be wrapped and alternate clockwise, counter-clockwise, etc...as per Loop Table #2 shown below:

Mainline Loop Table # 2

Lane 1	Lane 2	Lane 3	Lane 4
Clockwise	Counter-clockwise	Clockwise	Counter-clockwise

The induction loops shall follow this method to reduce crosstalk between adjacent loops. The synthetic cord reinforced hose outside jacket shall be stamped hose size, hose rating, clockwise or counter-clockwise, loop dimension, # of turns, and wire type every 1.8 meters (6 feet) or as directed by the Engineer.

Induction loops on exit and entrance ramps shall be square or rectangular with edges perpendicular or parallel to traffic flow. All mainline loops shall be round loops, 6 feet (1.8 meters) in diameter. Induction loops shall be centered on all ramps and in traffic lanes unless designated otherwise on the plans or by the Engineer. Traffic lanes shall be referred to by number and loop wire shall be color-coded and labeled accordingly. Lane one shall be the lane adjacent to the median, or that lane on the extreme left in the direction of the traffic flow; subsequent lanes are to be coded sequentially towards the outside shoulder. A chart which shows the coding for each installation shall be included in each cabinet.

All induction loops shall contain four (4) turns of No. 14 wire min. Each induction loop shall have its own Canoga 30003 or equal home run or lead-in to the cabinet. Induction loops shall not be connected in series with other loops. This wire shall be free from kinks or any insulation abrasions. The loop lead-in shall be barrel sleeved, crimped, soldered and protected by heat shrinkable tubing to the loop #14 wire. Lead-ins shall be twisted in such a manner so as to prevent mechanical movement between the individual cables. Lead-ins shall be brought into a cabinet or handhole at the time the induction loop is placed in the pavement. Loops located over 1000 feet (300 m) from cabinet shall require five (5) turns of No. 14 wire.

Loop lead-ins placed in handholes shall be coiled, taped and hung from the side of the handhole to protect against water damage. Any other method of installation will require prior written approval of the Engineer. Each loop lead-in shall be color coded and tagged in each handhole through which it passes. The loop lead-in shall be color coded and tagged at the core hole, in each junction box it passes through, and at the termination point in the cabinet.

RAMP LOOP TABLE #1

W (M)	S (M)
13 ft (4.0m)	9 ft (2.8m)
14 ft (4.3m)	10 ft (3.1m)
15 f t (4.6m)	11 ft (3.4m)
16 ft (4.9m)	12 ft (3.7m)
17 ft (5.2m)	13 ft (4.0m)
18 ft (5.5m)	14ft (4.3m)
19 ft (5.8m)	15ft (4.6m)
20 ft (6.1m)	16 ft (4.9m)
21 ft (6.4m)	17 ft (5.2m)
22 ft (6.7m)	18 ft (5.5m)
23 ft (7.0m)	19 ft (5.8m)
24 ft (7.3m)	20 ft (6.1m)
25 ft (7.6m)	21 ft (6.4m)

The loop shall be spliced to the lead-in wire with a barrel sleeve crimped and soldered. An epoxy filled heat shrink tubing shall be used to protect the splice. The soldered connection shall be made with a soldering iron or soldering gun. No other method will be acceptable, i.e. the use of a torch to solder will not be acceptable. The heat shrink tube shall be shrunk with a heat gun. Any other method will not be acceptable, i.e. the use of a torch will not be acceptable. No burrs shall be left on the wire when done soldering. Cold solder joints will not be acceptable. Refer to TSC typical(s) TY-1TSC-418 #2 & #3 for proper loop to loop lead-in splice detail.

The new concrete pavement slab in which the loop is installed shall be stamped near the right shoulder to indicate an induction loop.

4. TRAFFIC SYSTEMS CENTER LOOP SPLICING REQUIREMENT COLOR CODE

MAINLINE LOOPS				METERING LOOPS	
Lane 1	Blue	Lane 4	Violet	Queue	Green
Lane 2	Brown	Exit	Black	Demand	Yellow
Lane 3	Orange	Entrance	White	Passage	Red

When 2 or 3 loops are installed on an exit or entrance ramp the loop color code shall conform to the mainline loop color code and shall be marked as entrance or exit ramp loops.

In addition to color codes each loop shall be identified with a written label attached to the loop wire, or lead-in wire. The tags shall be Panduit #MP250W175-C or equivalent. All wires and cables shall be identified in each handhole or cabinet the cable passes through, or terminates in. The labels shall be attached to the cable by use of two cable ties.

5. PROSECUTION OF SURVEILLANCE WORK

Should damage occur to any Traffic Systems Center cabinets, housing telemetry equipment and/or vehicle detection equipment, the Contractor shall install and replace all damaged equipment at his own expense. The Traffic Systems Center staff shall determine what equipment shall be reusable and what shall be replaced. Replaced equipment shall be of equal or better quality and type.

6. CONNECTIONS TO EXISTING INSTALLATIONS

Where new work connects to existing installations, the Contractor shall do all necessary cutting, fitting and foundation drilling to the existing installation and shall remove all existing work, as required, to make satisfactory connections, with the work to be performed under these Provisions, so as to leave the entire work in a finished and workmanlike manner, as approved by the Engineer. No raceways shall be allowed to enter cabinet through the sides or backwalls.

7. PROTECTION OF WORK

Electrical work, equipment and appurtenances shall be protected from damage during construction until final acceptance. Electrical raceway or duct openings, shall be capped or sealed from the entrance of water and dirt. Wiring shall be protected from mechanical injury.

8. STANDARDS OF INSTALLATION

Electrical work shall be installed in a neat and workmanlike manner in accordance with the best practices of the trade. Unless otherwise indicated, materials and equipment shall be new and installed in accordance with the manufacturer's recommendations.

Except as specified elsewhere herein, materials and equipment shall be in conformance with the requirements of Section 106 of the Standard Specifications.

9. TESTING

Before final acceptance, the induction loops shall be tested. Tests will not be made progressively, as parts of the work are completed. They shall be all made at one time. Items which fail to test satisfactorily shall be repaired or replaced.

An electronic test instrument capable of measuring large values of electrical resistance, such as Major Megger, shall be used to measure the resistance of the induction loop and its lead-in. The resistance of the loop and its lead-in shall be a minimum of 100 megohms above ground under any conditions of weather or moisture. The resistance tests and all electronic tests shall be performed in the presence of the Engineer any number of times specified by the Engineer. The loop and loop lead-in shall have an inductance between 100 microhenries and 700 microhenries. The continuity test of the loop and loop lead-in shall not have a resistance greater than two (2) ohms. The Contractor shall do all testing in the presence of the Engineer and all readings will be recorded by the Engineer. Testing shall be done with an approved loop tester.

10. FINAL ACCEPTANCE INSPECTION

When the work is complete, tested and fully operational, the Contractor shall schedule a Final Acceptance Inspection with the Engineer. Final acceptance will be made as a total system, not as parts.

The Contractor shall furnish the necessary manpower and equipment to make the Final Acceptance Inspection. The Engineer will designate the type of equipment required for the inspection tests.

11. METHOD OF MEASUREMENT

The induction loop measurement shall be the length of rubber reinforced hose in the pavement which contain loop wire. The actual length of wire used in the rubber reinforced hose shall not be considered in any measurement.

12. BASIS OF PAYMENT

This item will be paid at the contract unit price per lineal meter (foot) as PREFORMED INDUCTION LOOP. Lead-in cable will be paid at the contract unit price per lineal foot (meter) as 4-CONDUCTOR NO.18 TWISTED SHIELDED. The price will be payment in full for furnishing and installing all materials listed complete and operating in place.

GROUNDING OF ITS SUBSYSTEMS (TSC T 420#8)
Effective: March 12, 2009

The grounding of ITS subsystems shall meet the requirements of Section 806 of the Standard Specifications. In addition, amend Article 806.03 of the Standard Specifications to include:

General. All ITS subsystems (ramp metering system, dynamic message sign system, system detector stations, etc.), associated equipment, and appurtenances shall be properly grounded in strict conformance with the NEC and as shown on the Plans.

Testing shall be according to Section 801. 13(a)(5) of the Standard Specifications:

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 as the phase (hot) conductors.

b) The equipment-grounding conductor shall be green color-coded. The following is in addition to Section 801.04 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 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 connectors shall be bonded, using a listed grounding conductor, to all ramp meters, DMS, and detector cabinets, handholes, and other metallic enclosures throughout the ITS subsystems, except where noted herein. A listed electrical joint compound shall be applied to all conductor terminations, connector threads, and contact points.

3.) All metallic and non-metallic raceways containing ITS 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.

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.

BASIS OF PAYMENT: Payment shall be included in the various items associated with ITS.

ELECTRIC CABLE IN CONDUIT, NO. 19 25 PAIR

DESCRIPTION

It is the intent of this specification that a continuous communication cable be installed on the Expressway and be connected to the Traffic Systems Center. All surveillance installations along the Expressway will be connected to this cable which shall be connected to the Traffic Systems Center building at approximately East Avenue and the Eisenhower Expressway. This item shall consist of furnishing and installing a 25 pair No. 19 gauge wire, telephone type cable, with all necessary connection blocks, binding posts, connections and all necessary miscellaneous hardware. The 25 pair No. 19 cable shall conform with these specifications and the current edition of The Rural Electrification Specification (REA) PE-39.

MATERIAL & CONSTRUCTION

The #19 telecommunication cable shall meet the requirements set forth in the R.E.A. Specification PE-39. Shielding shall be fully annealed solid copper. Shielding between cables shall be bonded together by a #10 AWG copper wire and stainless steel clamps.

CABLE JACKET:

Cable Jacket shall meet requirements set forth in REA specifications PE 39 Section 10 Cable Jacket. The Cable Jacket shall be minimum a composition that incorporates medium -density polyethylene as the base resin.

SHIELD

A gopher-resistant corrugated shield of fully annealed copper shall be applied longitudinally over the core wrap. The shield shall meet the specifications set forth in REA Specifications PE-39 Section 9 Shield and Optional Armor.

TESTING

Once the telecommunications cable is installed complete with all cable terminations complete the Contractor shall request an end to end test. The Contractor shall request the end to end test at least 7 days in advance to the TSC Engineer. Any lane closures and/or any other safety measures that need to be taken shall be provided for by the Contractor and shall be considered incidental to the cost of this item. The type of test performed shall be an end to end test with Halcyon type equipment transmitting and receiving at each end of the cable. Each pair shall be tested and the results shall be recorded and submitted to the Engineer. If any results don't fall within the requirements set forth in (REA) PE-39, the Contractor shall correct and re-test that cable pair. Traffic Systems will tolerate only one pair out of every 50 pair of cable that doesn't meet or exceed specifications set forth in (REA) PE-39.

INSTALLATION DETAILS

The telecommunication cable shall be installed in the median barrier wall where a 4-inch (100mm) P.V.C. duct shall be provided for its installation. The Contractor shall insure that the telecommunication duct is continuous, free of debris and not connected to the electrical lighting cable duct.

"Junction boxes" or cross connect terminals shall be installed in or at the median barrier wall at every Surveillance installation, as shown on the plans, and every 1500 feet (457m). The cable shall be continuous between runs. No splices will be allowed in the cable. Should it not be possible to run the cable continuous between Surveillance installation, the interconnection of the cable will be allowed in the "junction box" with U1B/U1Y connectors or equal. These "splices" shall be held to a minimum and maximum cable lengths shall be used to reduce the number of connections.

The cables shall be terminated in a Surveillance installation cabinet as shown on the plan. The cables shall be connected on a type 66 connector block which shall be mounted in the cabinet. The Surveillance installation shall be connected to the appropriate cable pair on the 66 blocks with a 6C-No. 19 cable. Two (2) type 66 connecting blocks shall be required per 50 pair cable installation; four (4) type 66 connecting blocks shall be required per 100 pair cable installation.

The type 66 quick connect terminal blocks shall be furnished with tin lead plated clips manufactured to Western Electric Specification #669A. There shall be eight spring clips, which are electrically and mechanically common to each other, to a row and 25 rows of spring clips. The type 66 connecting block shall be 8 x 50, 13-5/16 x 3-3/8 x 1-1/8 (338.1mm x 85.7mm x 28.6mm). The block shall be molded of self-extinguishing material and shall have molded in fanning strips on each side which shall be marked every five rows. The top of the block shall be lettered by rows (A-B-C etc.) and the retaining plate shall be numbered every other row and lettered on the top to correspond to the face of the block. The Contractor shall insure that none of the spring clip rows are shorted together or shorted to the junction box or cabinet. The Contractor shall supply the type 66 block with high impact PVC, transparent snap on protective covers. The Contractor shall spray the spring clips with a protective coating after all wires are terminated. A punch down impact tool will be required to make the connection to the type 66 block. The punch down, impact tool shall be equal to or exceed the Harris Dracon DELUX Automatic Impact Tool D814 for type 66 blocks only.

When installing the telecommunication cable, the Contractor shall extend his installation and connection of the cable to the next adjacent surveillance installation or "junction box" beyond the limits of his contract section. He shall be responsible for insuring that the cable is continuous and connected from one contract section to the other.

BASIS OF PAYMENT

This work shall be paid for at the contract price per lineal foot (meter) for ELECTRIC CABLE IN CONDUIT, NO. 19 25 PAIR, which price shall be payment in full for furnishing all materials, making all electrical connections and installing the cable complete in place.

Connecting blocks, terminal blocks, wiring, mounting brackets, U1B/U1Y connectors, and miscellaneous hardware will not be paid for separately, but shall be considered as incidental to the cost of this item.

ELECTRIC CABLE NO. 19 - 6 CONDUCTORS OR 12 CONDUCTORS (TSC T421#2)
Effective: June 1, 1994 Revised: May 12, 2008

DESCRIPTION

This item shall consist of furnishing and installing telephone cable intended for direct burial in P-duct or G.S. conduit. The number of conductors shall be twisted into pairs stranded into a cable core and enclosed in two polyethylene jackets, with a copper shield between the inner and outer jackets. All No. 19 electric cable shall conform with these specifications and the current addition of the Rural Electrification Specification for fully color-coded, polyethylene or crystalline propylene/ethylene copolymer-insulated, double polyethylene copolymer-insulated, double polyethylene-jacketed telephone cables for direct burial PE 54. The No. 19 cables shall be installed in complete spans.

MATERIAL AND TESTING

No. 19 electric cable shall meet the requirement set forth in the REA Specification PE 54.

CONSTRUCTION

CONDUCTORS: Each conductor shall be a solid round wire of commercially pure annealed copper. Conductors shall meet the requirements of ASTM Designation B-3, latest issue, except that the requirements for dimensions and permissible variations are waived.

CONDUCTOR INSULATION: Each conductor shall be insulated with colored insulating grade high density polyethylene or crystalline propylene/ethylene copolymer. The manufacturer shall have the option of using either of the above materials.

IDENTIFICATION OF PAIRS: The polyethylene or propylene copolymer compounds used for conductor insulation shall be colored so as to identify (1) the "tip" and "ring" conductor of each pair, and (2) each pair in the completed cable.

STANDARDS OF COLOR: The colors of insulated conductors supplied in accordance with this specification shall fall within the limits of standards of color as defined by the Munsell Color Notations specified in paragraph 4.031.

TWISTING OF PAIRS: The insulated conductors shall be twisted into pairs.

In order to provide sufficiently high crosstalk losses at voice and carrier frequencies, the pair twists shall be designed to enable the cable to meet the pair-to-pair capacitance unbalance requirements and the crosstalk requirements.

CORE COVERING: The core shall consist of an inner jacket of polyethylene applied over the completed core, a metal shield, and an outer jacket of polyethylene.

SHIELD: A gopher-resistant corrugated shield of fully annealed copper shall be applied longitudinally over the inner jacket. The shield shall completely cover the inner jacket and shall be so constructed that the completed cable shall meet the bending requirements given in paragraph 9 of Rural Electrification Specification PE-54. The shield shall provide 100% electrical shielding plus resistance to gopher attack or other severe service conditions.

MUTUAL CAPACITANCE: The average mutual capacitance of all pairs in any reel shall be in accordance with the following table:

Number of Cable Pairs	Average Mutual Capacitance mf/mile (mf/km)	
3	0.083 plus or minus 0.010	(0.052 plus or minus 0.006)
6, 12	0.083 plus or minus 0.007	(0.052 plus or minus 0.004)
18 or more	0.083 plus or minus 0.004	(0.052 plus or minus 0.002)

Mutual capacitance is the effective capacitance between the two wires of a pair.

CAPACITANCE UNBALANCE: (Pair to Pair): Pair-to-pair capacitance unbalances as measured on the completed cable at a frequency of 1000 plus or minus 100 Hz shall not exceed the following values:

Number of Cable Pairs	Pair-to-Pair Capacitance Unbalance (Max) mmf/kft (mmf/km) Max. Individual
Less than 12	100 (181.1)

CAPACITANCE UNBALANCE - (Crosstalk Loss): The r.m.s. output-to-output far-end crosstalk loss as measured on the completed cable at a frequency of 150 kHz shall be not less than 73 db per 1,000 feet (67.8 db per kilometer) for cable sizes of 6 pairs and larger. The r.m.s. calculation shall be based on the combined total of all adjacent and alternate pair combinations within the same layer and center to first layer pair combinations.

CAPACITANCE UNBALANCE - (Pair to Shield): Pair-to-shield direct capacitance unbalances as measured on the completed cable at a frequency of 1000 plus or minus 100 Hz shall not exceed the following values:

Cable Pairs	Pair-to-Shield Unbalance (Max) mmf/kf (mmf/km) Max. Individual
Less than 12	250 (820)

CONDUCTOR RESISTANCE: The d.c. resistance of any conductor as measured on the completed cable shall not exceed the following values when measured at or corrected to 20° C.

AWG	Maximum Resistance ohms/kf (ohms/km)
19	8.7 (28.5)

BASIS OF PAYMENT

This work will be paid for at the contract price per lineal foot (meter) for ELECTRIC CABLE IN CONDUIT, COMMUNICATIONS, NO. 19 of the number of conductors specified, for furnishing all materials, making all electrical connection and installing the cable in place.

ELECTRICAL CABLE IN CONDUIT, 4C/NO. 18 SHIELDED LOOP LEAD-IN (TSC T421#14)
Effective: March 1, 2010 Revised: 3/30/11

Description.

This work shall consist of furnishing materials and labor for installation of shielded loop lead-in cables in conduit as specified herein and indicated by the Engineer, complete with all identification, terminating and testing.

Materials.

General:

Lead-ins shall be Canoga 30003 or equal cable. The jacket of high density polyethylene shall be rated to 600 volts in accordance with UL 83 Section 36.

All cables shall be UL listed.

Unless otherwise indicated, all cable shall be rated 600 volts.

The cable shall be rated 90 degrees C dry and 75 degrees C wet and shall be suitable for installation in wet and dry locations, exposed to the weather, and shall be resistant to oils and chemicals.

The UL listing mark, cable voltage, insulation type and ratings, as well as the cable size shall all be clearly printed on the cable in a color contrasting with the insulation color.

Conductors:

Conductors shall be #18 awg 7X.0152" un-coated copper.

Conductors shall meet the requirements of ASTM Designation B-8 as applicable.

Unless otherwise indicated, all conductors shall be stranded and twisted 4 turns per foot.

The cable shall be an assembly of pairs of left hand lay twisted insulated conductors, with a core filled with a petroleum base flooding compound, overlapped conductive tape shield and a black high density polyethylene jacket overall. This cable shall meet the requirements of IEEE Standard 383.

Insulation:

The conductors shall be coded as follows: black-red-white-green.

Cable insulation shall incorporate polyvinyl chloride (PVC) with a clear nylon covering overall as specified and the insulation shall meet or exceed the requirements of ICEA S-61-402, NEMA Standard Publication No. WC-5, UL Standard 83, as applicable.

Unless otherwise indicated, cable conductors shall be solid full color coded via insulation color.

Quality Control:

Submittal information shall include demonstration of compliance with all specified requirements.

All cables shall be delivered to the site in full reels. Cable on the reels shall be protected from damage during shipment and handling by wood lagging or other means acceptable to the Engineer. Reels shall be tagged or otherwise identified to show the UL listing.

Installation.

The loop lead-in shall be a Canoga 30003 or approved equal cable. The loop lead-in shall be barrel sleeved, crimped, soldered and protected by heat shrinkable tubing to the loop #14 wire. Lead-ins shall be twisted in such a manner so as to prevent mechanical movement between the individual cables. Lead-ins shall be twisted in such a manner so as to prevent mechanical movement between the individual cables. Lead-ins shall be brought into the cabinet or handhole at the time the induction loop is placed in the pavement. Loops located over 1000 feet from cabinet require four (4) turns of No. 14 wire.

Lead-in cable Canoga 30003 or equivalent will be installed where the lead-in length from point of interception to the point of termination exceeds 150 feet.

Where lead-in runs are less than 150 feet, the loop wire will be utilized as lead-in to the point of termination w/0 splices, being twisted 5 turns per foot. The loop wire will be paid for as "lead-in" from last point of sawcut in pavement at dive hole to point of termination.

Loop lead-ins placed in handholes shall be coiled, taped, and hung from the side of the handhole to protect against water damage. Any other method of installation will require prior written approval of the Engineer. Each loop lead-in shall be color coded and tagged in each handhole through which it passes. The loop lead-in shall be color coded and tagged at the core hole, in each junction box it passes through and at the termination point in the cabinet.

TRAFFIC SYSTEMS CENTER LOOP SPLICING REQUIREMENT

MAINLINE LOOPS		METERING LOOPS			
Lane 1	Blue	Lane 4	Violet	Loop 1	Green
Lane 2	Brown	Exit	Black	Loop 2	Yellow
Lane 3	Orange	Entrance	White	Loop 3	Red

When 2 or 3 loops are installed on an exit or entrance ramp the loop color code shall conform to the mainline loop color code and shall be marked as entrance or exit ramp loops.

In addition to color codes each loop shall be identified with a written label attached to the loop wire, or lead-in wire. The tags shall be Panduit #MP250W175-C or equivalent. All wires and cables shall be identified in each handhole or cabinet the cable passes through, or terminates in. The labels shall be attached to the cable by use of two cable ties.

Testing.

After installation, the cable shall be tested as approved by the Engineer. Cable failing to pass the test shall be replaced with new cable at no additional cost.

Method of Measurement.

The cable shall be measured for payment in linear foot in place. Measurements shall be made in straight lines between changes in direction and to the centers of Equipment. All vertical cable and permissible cable slack shall be measured for payment. A total of six (6) feet of slack shall be allowed for the end of a run terminating at a panel and four (4) feet will similarly be allowed when terminating at a wall-mounted panel. Additional vertical distance for the height of conduit risers, etc., as applicable, will be measured for payment for equipment so mounted.

Basis of Payment.

This work shall be paid at the Contract unit price per linear foot, furnished and installed for ELECTRICAL CABLE IN CONDUIT , LEAD IN, NO. 18 4/C, TWISTED SHIELDED.

HANDHOLE (TSC T428#1)
Effective: June 1, 1994 Revised: May 19, 2009

DESCRIPTION

This item shall consist of constructing a handhole, a heavy-duty handhole, or a double handhole, cast in place, complete with frame and cover and in accordance with the following requirements and conforming in all respects to the lines, grades, and dimensions shown on the plans or as directed by the Engineer. All handholes shall be installed in accordance with the Standard Specifications Sec. 814.

MATERIALS

All handholes shall be constructed of Class SI concrete meeting the requirements of the Standard Specifications for Road and Bridge Construction Section 1020.

CONSTRUCTION DETAILS

Handhole of the type specified shall be constructed in accordance with the details shown on the plans and conform to the following requirements:

1. Concrete: Concrete construction shall be done in accordance with the provisions of Concrete for Structures and Incidental Construction contained in the Standard Specifications for Road and Bridge Construction Sec. 503.

2. Placing Castings: Castings shall be set accurately to the finished elevation so that no subsequent adjustment will be necessary. Castings shall be set flush with a sidewalk or pavement surface. When installed in an earth shoulder away from the pavement edge, the top surface of the casting shall be 1 in. (25.4mm) above the finished surface of the ground.

3. Backfilling: Any backfilling necessary under a pavement, shoulder, sidewalk or within 2 ft. (60 cm) of the pavement edge shall be made with sand or stone screenings.

4. Forming: Forms will be required for the inside face of the handhole wall, and across all trenches leading into the handholes excavation. The ends of conduits leading into the handhole shall fit into a conduit bell which shall fit tightly against the inside form and the concrete shall be carefully placed around it so as to prevent leakage.

5. French Drain: A french drain conforming to the dimensions shown on the plans shall be constructed in the bottom of the handhole excavation.

6. Steel Hooks: Each handhole shall be provided with four galvanized steel hooks of appropriate size, one on each wall of the handhole.

7. Frame and Cover: The outside of the cover shall contain a recessed ring Type “G” for lifting and a legend "IDOT TSC" cast-in.

8. Cleaning: The handhole shall be thoroughly cleaned of any accumulation of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of final inspection.

BASIS OF PAYMENT

This work will be paid for at the contract unit price each for HANDHOLE or HEAVY DUTY HANDHOLE, or CONCRETE HEAVY DUTY HANDHOLE (SPECIAL), as the case may be, for all necessary excavating, backfilling, disposal of surplus material and form work, frame and cover, and furnishing all materials.

TONE EQUIPMENT – PROGRAMMABLE (TSCT454#1)
Effective: June 1, 1994 Revised: May 19, 2009

1.0 General

1.1 Telemetering equipment shall be furnished and installed in the Traffic Systems Center Office and along expressway at locations designated in these Special Provisions and Plans, and in strict accordance with these specifications.

1.2 Communication link from field located cabinets to the Traffic Systems Center Office will be via 3002 Channel, C1 conditioning, Type 7 FDDC telephone pairs leased by the Traffic Systems Center, or telecommunication cable in barrier wall.

1.3 All tone transmitters and tone receivers shall be three frequency frequency-shift; that is equipment which the center frequency is normally on at all times and is electrically shifted +30 Hz to a higher frequency (mark) or -30 Hz to a lower frequency (space). Other frequency shifts from +10 to +300 shall be user selectable.

1.4 All transmitters, receivers, and power supplies shall be of the modular plug-in type construction. The circuitry of each unit shall be protected by a U-shaped metal chassis, cadmium-plated, with iridite finish.

1.5 All tone equipment shall be physically interchangeable with existing Traffic Systems Center tone equipment, that is furnished tone equipment shall be directly compatible with and replaceable by existing tone equipment with no modification to any hardware.

1.6 All transmitters, receivers, and power supplies shall be solid state. All transistors shall be silicon, excepting the power transistors in power supplies. All transmitters and receivers I.C.s shall be plug in.

1.7 All transmitters, and receivers shall be programmable frequency-shift key units. These units shall have a universal card which is field programmable for any channel frequency or shift. The frequencies available shall be in the range of 120 Hz to 5235 Hz in increments of 5 Hz. The shifts available shall be 10, 25, 30, 35, 42.5, 60, 70, 75, 120, 150, 240 and 300 Hz. A new center frequency or shift shall be field programmed by simply changing setting of the program switch.

1.8 All transmitters and receivers shall be capable of being operated at any frequency program switches. The center frequency shall be clearly visible through or on the front of each transmitter and receiver. Such indication shall always correspond to the frequency of the elements currently operating in each module. Contractor shall supply 500 complete sets of pre-printed tags for labeling the units indicating the center frequency.

1.9 Transmitters and receivers shall work into a communication link with standard impedance of 600 ohms.

1.10 Transmitters and receivers shall be individually fused.

2.0 Mechanical and Environmental Requirements

2.1 Field Units

2.1.1 Receivers, transmitters and power supplies shall be capable of operation in field cabinets which provide protection against direct contact with the elements with no special provisions for environment control.

2.1.2 All field located tone equipment shall be mounted in the surveillance cabinets as designated elsewhere in these specifications.

2.1.3 All field located tone equipment shall be capable of operation on a temperature range of -22 degrees F to 140 degrees F (-30° to +60° C) and shall have P.C. boards coated for protection against humidity in the range of 0% to 96%.

2.1.4 All field tone equipment shall be capable of being tipped, while in operation, from the vertical to the horizontal position and back again, without having adverse effect on the continuous operation of the transmitter, receiver or power supply.

TONE EQUIPMENT - POWER SUPPLY (TSCT454#2)
Effective: June 1, 1994 Revised: May 19, 2009

1.0 Power Supply

1.1 The power supply shall operate on input voltage of 117 VAC allowing for 10% variation in line voltage.

1.2 The power supply shall provide a regulated 12 VDC output at 1.7 amps.

1.3 Each tone equipment mounting frame field located or office located, shall have its own regulated power supply, capable of operating at least ten tone modules in any combination of transmitters and receivers.

1.4 The power supply shall have floating type gold plated connections to insure good connection.

1.5 The front panel of the power supply shall have an on/off switch and a Red LED that indicates the status of the output DC voltage.

1.6 The power supply shall contain a switch and L.E.D. on the front panel to permit the monitoring of the supply voltage with the existing Traffic Systems Center tone test meter.

1.7 The power supply shall be fused.

1.8 The power supply shall have a DC voltage control.

BASIS OF PAYMENT

This item shall be paid for at the contract unit price each for TONE EQUIPMENT - POWER SUPPLY, installed, operating, and completely in place.

Terminal boards, wiring, and miscellaneous hardware will not be paid for separately, but shall be considered as incidental to the cost of this item.

TONE EQUIPMENT - 3 FREQUENCY PROGRAMMABLE RECEIVER (TSC-T454#3)
Effective: June 1, 1994 Revised: May 19, 2009

1.0 Receiver

1.1 The requirements as to the programmable channel frequency range, channel spacing, holding of shifted frequency, and operating voltage shall be the same as those for 3 Frequency Transmitter.

1.2 Input sensitivity of tone receiver shall be adjustable down to -45 dbm. The dynamic range shall be 25 db.

1.3 Adjacent channel attenuation shall be at least 35 db.

1.4 Each receiver shall be capable of test operation of at least 30 pulses per second.

1.5 Each receiver shall have one single pole, double throw, mark relay output and one single pole, double throw space output relay.

1.6 Each receiver shall also have a carrier detector circuit with one single pole, double throw relay output.

1.7 All output relay contacts shall be capable of handling a minimum of 30 VA continuously. Any substitution shall be subject to written approval of the Engineer.

1.8 Receiver shall have L.E.D. indicators for Mark-Red, Space-Yellow and Carrier-Green, visible through the face panel.

1.9 The receiver shall have a floating type gold plated connector to insure a good connection.

1.10 Receiver shall operate in a space hold, 2 state operation.

1.11 An attenuation plug shall be provided to set sensitivity level of receiver.

1.12 Each receiver shall come with 2 spare relays as outlined in Sec. 1.5 of this specification.

1.13 Test points through front face plate shall be provided to test for DC voltage levels.

BASIS OF PAYMENT

This item will be paid for at the contract unit price each for TONE EQUIPMENT - 3 FREQUENCY PROGRAMMABLE RECEIVER, installed, operating, and completely in place.

Terminal boards, wiring, optical-isolator, relays, cable assemblies and miscellaneous hardware will not be paid for separately, but shall be considered as this item.

TONE EQUIPMENT - 3 FREQUENCY PROGRAMMABLE TRANSMITTER (TSC T454#4)
Effective: June 1, 1994 Revised: May 19, 2009

1.0 Transmitter

1.1 The tone transmitter shall operate on an input of a regulated 12 VDC.

1.2 The tone frequencies shall be programmable in the audio frequency range between 120 and 3820hertz.

1.3 The transmission quality shall be such that there may be as many as 25 channels of tone transmitters operating over one telephone pair with perfect discrimination by the associated tone receivers. The frequency of one tone transmitter shall have no adverse effect on the operation of the frequency of any other transmitter connected to the same telephone pair.

1.4 Output level of tone transmitters shall be adjustable over a range of -40 to +13 dbm.

1.5 Transmitter harmonic output shall be at least 42 db down from the fundamental for each harmonic component.

1.6 Each unit furnished shall have an external jumper wire on the barrier type terminal block to provide a two frequency space-hold operation.

1.7 The transmitter shall have a floating type gold plate connector to insure good connection.

1.8 The transmitter shall be capable of holding any of its assigned frequencies (mark, space) continuously without degradation in life of performance.

1.9 Each transmitter shall be capable of test operation of at least 30 pulses per second.

1.10 No transmitter plugs shall be required for tone output. A toggle switch thru the face plate shall put the transmitter "on line" and "off line".

1.11 Transmitter shall have L.E.D. indicators for Mark-Red, Space-Yellow and Carrier-Green visible thru the face panel.

1.12 Test points through front face plate shall be provided to test for DC voltage levels.

TONE EQUIPMENT-MOUNT FRAME (TSC T454#7)
Revised: May 19, 2009

DESCRIPTION:

Under this item, for a unit price each, the Contractor shall furnish and install an Iniven 1X 11-1 mounting rack or equivalent in strict accordance with supplement and specified herein.

Each tone equipment mounting frame field located or office located, shall have with power supply added, 11 slots capable of operating at least ten tone modules in any combination of transmitters and receivers.

Each mounting frame shall provide a separate barrier type terminal block with screw-type terminal for each transmitter, receiver, and power supply.

Each mounting frame shall be constructed of steel with zinc bonderizing and hard baked finish of gold metallic epoxy paint.

Where the mounting frame is not completely filled with tone modules, the unused modules spaces shall be provided with the barrier type terminal blocks, within each mounting frame, shall be wired to the 12 VDC power supply.

Each mounting frame for the field equipment shall be of a size that shall hold the power supply, all transmitters and all receivers required at each field cabinet as specified elsewhere in these Special Provisions.

In all field cabinet locations where mounting frames are specified the mounting frames shall be bolted to the rear wall of the cabinet by means of a swing bracket as per field mounting frame with cradle assembly drawing #TY-1TSC 400#6.

The bracket cradle shall have three (3) position stops: horizontal, 45 degree and vertical.

The bracket cradles shall be constructed of ¼" (6.35mm) steel, cadmium plated with an irridite finish, as shown on plan for cradle assembly drawing #TY-1TSC 400#7.

BASIS OF PAYMENT

This work shall be paid at the contract unit price each for TONE EQUIPMENT MOUNT FRAME, which shall be payment in full for all work as described herein and as directed by the Engineer.

CABINET HOUSING EQUIPMENT (TSC T637#2)
Effective: June 1, 1994 Revised: March 21, 2013

DESCRIPTION

This item shall consist of furnishing and installing cabinets of the type and size specified in place including anchor bolts, bases, pedestals, posts, fans, cable harnesses, ground rods, terminal boards, shelves, mounting hardware, and all miscellaneous items at locations as directed by the Engineer.

MATERIALS

Cabinets shall be of fabricated aluminum supplied in sizes with minimum inside dimensions as listed below.

TYPE	HEIGHT	WIDTH	DEPTH	THICKNESS	OPENING
E.S.P. 1	22-1/2”	14-1/4”	9-3/4”	3/16”	18” x 11”
E.S.P. 2	36”	20”	15”	3/16”	28” x 17-1/2”
E.S.P. 3	49-1/2”	30”	17”	3/16”	38” x 27-11/2”
E.S.P. 4	55”	44”	26”	3/16”	2-1/2” x 41-1/2”
E.S.P. 1	571.5mm	362mm	248mm	4.7mm	457mm x 279mm
E.S.P. 2	914.4mm	508mm	381mm	4.7mm	711mm x 444.5mm
E.S.P. 3	1257.3mm	762mm	432mm	4.7mm	965mm x698.5mm
E.S.P. 4	1397mm	1117.6mm	660.4mm	4.7mm	1079.5mm x 1054.1mm

Cabinets shall be watertight. Doors shall be gasketed to provide a waterproof seal. Bases shall be caulked to obtain a moisture-proof bond. All cabinet types shall have a minimum of two (2) shelves for setting detectors and other equipment on, and Type 2 Corbin brass locks or equal.

E.S.P. Type 3 and Type 4 cabinets shall be fitted with a thermostatically controlled fan. It shall be mounted at the top of the cabinet for a forced air fan system that has a screened air exhaust opening under roof overhang and no opening in top of cabinetry. The fan shall be capable of operating at 130C.F.M. (3.68m³/min) at .160” (4.1mm) of water static pressure.

Where the E.S.P. Type 3 cabinet is used to house equipment controlling ramp metering signals, the E.S.P. Type 3 cabinet shall have a signal load relay installed. The signal load relay shall consist of two components, a base which is mounted on the E.S.P. Type 3 cabinet wall and a locking screw. The coil of this relay shall be connected to the mark output of the signal change tone receiver. The one set contacts of the load relay shall be used to change the ramp signals and one set of contacts shall be used to key the mark input to the signal change transmitter. This relay shall be incidental to the cost of the cabinet when used.

Materials shall conform to controller cabinets as listed in the Standard Specifications 1074.03 except that the door shall not have any outside designation nor shall the cabinet door be equipped with a police door or louvers. Post top mounted cabinets, shall have a ¼" (6.4mm) bottom of cabinet welded.

Each Induction loop shall have lightning protection. The Contractor shall furnish and install stud-mounted lightning protection devices. The device shall have three-terminals, two of which are connected across the loop input of the detector for differential mode protection and the third terminal grounded to protect against common mode damage. Differential mode surge shall be clamped by the semi-conductor array instantly and common mode surge shall be handled by three element gas discharge tube which fires at 400VDC and thereafter clamps the two loop leads to 30 volts in respect to ground. The device shall be installed in close proximity to the loop input. Extension of the factory leads of the device shall not be allowed.

Each Cabinet shall have a Corbin # 2 lock.

INSTALLATION DETAILS

Installation shall conform to applicable portions of Section 863 of the Standard Specifications.

Cabinets, cabinet posts, and cabinet pedestals shall be primed and painted in accordance with TSC Specification T712#1. The final coat color shall be specified by the T.S.C. at the time of the pre-construction meeting. Interior of all cabinets shall be painted high gloss white.

CMS/DMS Type 4 cabinets shall be serviced by 117 volts AC power with a 60 amp circuit breaker minimum.

All cabinets shall be serviced by 117 volts AC power and a telecommunication system. Each cabinet shall be equipped with a 10 ampere circuit breaker, ground rod, 115 VAC RFI filtering surge protector (ACD-340 surrestor), 130 volt, 70 joules, 10 amp varistor, lightning protection for each loop (SRA-6LC surrestor), data line protection for each leg of the four (4) wire telecommunication system (SRA 64C surrestor), a pull chain porcelain base light fixture with a 3 prong 110 volt outlet. The porcelain fixture shall be mounted on metal plate, that shall be mounted on the cabinet ceiling. No holes shall be drilled thru the cabinet exterior for internal equipment mounting.

Each wire entering a cabinet shall be trained in a workmanlike manner and lugged at each terminal strip or switch. If more than one wire has a common terminal on a terminal strip, the adjacent strip shall be used and an appropriate jumpered connection shall be made.

All cables and wiring entering a cabinet shall be dressed, harnessed, tied, laced, and clamped to produce a workmanlike wiring installation.

All cables (loop wires, power, phone) shall be labeled with a panduit type cable tag. The tag will identify the type of cable and the cable destination.

A copper grounding bus shall be mounted on the rear wall of the cabinets.

Each cabinet shall contain a wiring diagram of the installation in addition to the diagrams which are to be submitted to the Engineer.

Prior to the wiring of the cabinet, the contractor shall submit box print for approval before cabinet wiring shall begin.

The Contractor shall furnish three (3) diagrams of the internal and external connections of the equipment in each Traffic Systems Center cabinet. He shall also furnish the operating and maintenance instructions for all equipment supplied. One copy of the wiring diagrams for each cabinet shall be retained in each field cabinet. Wiring diagram shall be contained in a plastic pouch that shall be permanently mounted to the door of each cabinet. Contractor shall permanently mark the cabinet for each termination and each terminal connection as to loop, tone, closure, phone, and lane function of each termination in the cabinet.

Incidental to the cost of each cabinet, the Contractor shall construct 5" (127mm)P.C.C. sidewalk of a rectangular area 3' x 4' (1 meter by 1.2m) immediately adjacent to the cabinet foundation on the same side of the foundation as the cabinet door, with the 4' (1.2m)dimension of the rectangle parallel to the cabinet door when closed. If the width of the required cabinet foundation is greater than the 3 feet (1 meter) width of the standard concrete foundation. Type D, the 4' (1.2m) dimension of the sidewalk area shall be increased to equal the width of the foundation plus 1ft (30 cm) , the area to extend 6" (15cm) beyond each side of the foundation. This paragraph shall be applicable at all cabinet locations included in this Section. The only situations where this paragraph shall not apply are as follows: When the foundation is immediately adjacent to or within a paved sidewalk or shoulder area and no further surfacing is required. The Engineer shall be the sole judge as to the applicability of this paragraph in all questions arising therefrom.

No raceways shall be allowed to enter cabinet through the sides, top or back walls.

Anchor bolts shall be installed for pedestal and base mounted cabinets. These shall be considered as incidental to the cost of the cabinets.

Cable harnesses, terminal boards, and mounting hardware shall be installed as needed. These items shall be considered as incidental to the cost of the contract.

Terminal blocks provided in field cabinets shall be the heavy duty barrier type. The terminal block shall be a minimum of 2" (50.8mm) wide and 1-3/16" (30.2mm) deep. Center to center of the terminal screws or studs shall be a minimum of 21/32" (16 mm) with barriers in-between. Terminal blocks shall be rated at 45 amps 600 volts breakdown RMS line to line 11,000 V. and breakdown RMS line to ground 13,800 V. A marking strip shall be provided with each terminal block.

METHOD OF MEASUREMENT

Cabinets will be accepted as concrete foundation mounted, pole mounted, pedestal mounted, or attached to structure. Each cabinet installed complete and in place will be counted as a single unit.

BASIS OF PAYMENT

This work will be paid for at the contract price each for CABINET HOUSING EQUIPMENT, mounting and size specified, installed complete and in place.

CONCRETE FOUNDATION (TSC T 427#01)
Effective: June 1, 1994 Revised: Sept. 15, 2010

DESCRIPTION:

This item shall consist of constructing a concrete foundation for the installation of a traffic signal, cabinet, and cabinet with pedestal, anchor bolt, and ground rod in accordance with the following requirements and conforming in all respects to the lines, grades and dimensions shown on the plans or as directed by the Engineer and in applicable portions of Section 878 of the Standard Specifications and the Bureau of Design and Environment Concrete Foundation Detail #878001-08.

MATERIALS

The materials shall conform to the specifications of Class SI concrete and concrete Reinforcement Bars in the Standard Specifications for Road and Bridge Construction. The conduit and fittings within the limits of the foundation shall conform to the same requirements as that specified for the conduit outside these limits.

Anchor bolts shall meet the requirements of Section 505 of the Standard Specifications and the material shall conform to the requirements of Article 1006.09 of the Standard Specifications for Road and Bridge Construction. A ground rod shall be installed in each foundation and shall conform to Section 806. Unless otherwise indicated in plans, ground rods shall be one piece copper-clad steel rods 3/4” x 10’ (2cm x 3 m).

CONSTRUCTION DETAILS

Concrete foundations shall be Type A or Type D and location as specified on the plans. The top of the foundation shall be finished level. Shimming will not be permitted. All edges along the top of the foundation shall be given a 1 inch (25mm) bevel. A form extending a minimum of 9 inches (225mm) below the top surface of the foundation is required. The form shall be set level and means shall be provided for holding same rigidly in place while the concrete is being deposited. Whenever the excavation is irregular, a form shall be used to provide the proper dimension of the entire foundation below the ground surface. Where a concrete foundation is contiguous to a sidewalk, preformed joint filler of 1/2 inch (12mm) thickness shall be placed between the foundation and the sidewalk.

All conduit in the foundation shall be installed rigidly in place before concrete is deposited in the form. Insulated bushings shall be provided at the ends of conduit. Anchor bolts shall be set in place before the concrete is deposited by means of a template constructed to space the anchor bolts in accordance with the pattern of the bolt holes in the base. After installation of cables, all conduit openings in foundations shall be sealed with an approved mastic. The required number and size of galvanized steel conduits shall be installed in every concrete foundation as shown on the plans. An excess of galvanized steel conduits shall be installed in every concrete foundation. These excess stubs shall be 2 inches (50 mm) in diameter. Placement and quantity shall be determined by the Engineer, and the ends of the stubs shall be capped.

Incidental to the cost of each control box foundation, the Contractor shall construct a 5" (125 mm) P.C.C. sidewalk of a rectangular area 3 ft (1 mm.) by 4 ft (1.2 meter.) immediately adjacent to the cabinet door, with the 4' (1.2 meter) dimension of the rectangle parallel to the cabinet door when closed. This paragraph shall be applicable at all cabinet foundation locations included in this Section. The only situations where this paragraph shall no apply are as follows: When the foundation is immediately adjacent to or within a paved sidewalk or shoulder area and no further surfacing is require. The Engineer shall be the sole judge as to the applicability of this paragraph in all questions arising therefrom.

BASIS OF PAYMENT

This work will be paid for at the contract unit price per meter/foot for CONCRETE FOUNDATION of the type specified, which price shall be payment in full for all necessary excavating, backfilling, disposal of surplus material and formwork and furnishing all materials, anchor bolts, stubs and ground rod within the limits of the foundation.

REMOVE EXISTING CONCRETE FOUNDATION (TSC T444#1)
Effective: June 1, 1994 Revised: May 19, 2009

DESCRIPTION

This work shall consist of removing a concrete foundation to a level at least 3 feet (1 meter) below the adjacent grade, disposing of the foundation outside the right-of-way, backfilling the hole with approved material, and reconstructing the surface to match the adjoining area. If the concrete foundation is located in the sidewalk area, the entire sidewalk square or squares where the concrete foundation is located shall be replaced with new sidewalk.

BASIS OF PAYMENT

This work shall be paid for at the contract unit price each for REMOVE EXISTING CONCRETE FOUNDATION, which price shall be payment in full for all labor and materials necessary to complete the work described above.

FURNISHING AND INSTALLING TONE EQUIPMENT – PROGRAMMABLE (TSCT454#1)
Effective: June 1, 1994 Revised: May 19, 2009

1.0 General

1.1 Telemetering equipment shall be furnished and installed in the Traffic Systems Center Office and along expressway at locations designated in these Special Provisions and Plans, and in strict accordance with these specifications.

1.2 Communication link from field located cabinets to the Traffic Systems Center Office will be via 3002 Channel, C1 conditioning, Type 7 FDDC telephone pairs leased by the Traffic Systems Center, or telecommunication cable in barrier wall.

1.3 All tone transmitters and tone receivers shall be three frequency frequency-shift; that is equipment which the center frequency is normally on at all times and is electrically shifted +30 Hz to a higher frequency (mark) or -30 Hz to a lower frequency (space). Other frequency shifts from +10 to +300 shall be user selectable.

1.4 All transmitters, receivers, and power supplies shall be of the modular plug-in type construction. The circuitry of each unit shall be protected by a U-shaped metal chassis, cadmium-plated, with iridite finish.

1.5 All tone equipment shall be physically interchangeable with existing Traffic Systems Center tone equipment, that is furnished tone equipment shall be directly compatible with and replaceable by existing tone equipment with no modification to any hardware.

1.6 All transmitters, receivers, and power supplies shall be solid state. All transistors shall be silicon, excepting the power transistors in power supplies. All transmitters and receivers I.C.s shall be plug in.

1.7 All transmitters, and receivers shall be programmable frequency-shift key units. These units shall have a universal card which is field programmable for any channel frequency or shift. The frequencies available shall be in the range of 120 Hz to 5235 Hz in increments of 5 Hz. The shifts available shall be 10, 25, 30, 35, 42.5, 60, 70, 75, 120, 150, 240 and 300 Hz. A new center frequency or shift shall be field programmed by simply changing setting of the program switch.

1.8 All transmitters and receivers shall be capable of being operated at any frequency program switches. The center frequency shall be clearly visible through or on the front of each transmitter and receiver. Such indication shall always correspond to the frequency of the elements currently operating in each module. Contractor shall supply 500 complete sets of pre-printed tags for labeling the units indicating the center frequency.

1.9 Transmitters and receivers shall work into a communication link with standard impedance of 600 ohms.

1.10 Transmitters and receivers shall be individually fused.

2.0 Mechanical and Environmental Requirements

2.1 Field Units

2.1.1 Receivers, transmitters and power supplies shall be capable of operation in field cabinets which provide protection against direct contact with the elements with no special provisions for environment control.

2.1.2 All field located tone equipment shall be mounted in the surveillance cabinets as designated elsewhere in these specifications.

2.1.3 All field located tone equipment shall be capable of operation on a temperature range of -22 degrees F to 140 degrees F (-30° to +60° C) and shall have P.C. boards coated for protection against humidity in the range of 0% to 96%.

2.1.4 All field tone equipment shall be capable of being tipped, while in operation, from the vertical to the horizontal position and back again, without having adverse effect on the continuous operation of the transmitter, receiver or power supply.

CABINET HOUSING EQUIPMENT – REMOVAL (TSC T637#4)
Effective: Aug. 12, 1997 Revised: May 7, 1999

DESCRIPTION

This item shall consist of removing the existing cabinet from its present location, as shown on the plans, storing it for TSC Engineer Inspection, and transporting it to the State's Electrical Maintenance Contractor or as directed by the T.S.C. Engineer. The cabinet shall be removed from present location without damage to the cabinet or to the existing equipment and hardware in the cabinet. The TSC Engineer will inspect cabinet and control equipment to determine salvageability. The Contractor shall transport salvaged equipment to EMC for inclusion in State stock. Any damage resulting from the removal, transportation of the cabinet, equipment and associated hardware, shall be repaired to its original condition, or replaced in kind, at the Contractor's own expense, to the satisfaction of the T.S.C. Engineer. The T.S.C. Engineer shall be the sole judge to determine the extent of damage.

BASIS OF PAYMENT

This item will be paid for at the contract unit price each for CABINET HOUSING EQUIPMENT - REMOVAL, which price shall be payment in full for removal and delivery of cabinet, equipment and miscellaneous hardware. Any cabinet or equipment damaged by the Contractor's removal and transportation operation shall be replaced by the Contractor by the same type and kind of cabinet. The Traffic Systems Center Equipment Engineer shall be the sole judge of type and kind of replacement.

DIGITAL LOOP DETECTOR SENSOR UNIT (TSC T638#1)
Effective: June 1, 1994 Revised: May 19, 2009

1.0 Scope

1.1 This item shall consist of furnishing digital four or two channel loop detector sensor units complete with associated enclosures, cable harness, quick disconnect plugs, and operation manuals in strict accordance with these specifications.

2.0 Functional Requirements

2.1 The sensor unit shall operate on a regulated 117 VAC. The sensor unit shall be of solid state design throughout. Each sensor unit shall include four or two complete loop detector channels in the space that is normally occupied by an INDUCTION LOOP DETECTOR SENSOR UNIT.

2.2 The loop connected to each of the four channels or two shall be sequentially scanned at a rate of not less than 148 times per second. Only one loop shall operate at a time in the system to eliminate cross-talk.

2.3 The digital loop sensor unit shall be automatically and instantaneously self-tuning requiring no burn-in or warm-up time. Then it shall also track environmental changes.

2.4 The digital loop sensor unit shall be self-tracking and fully automatic in its recovery from power failure.

2.5 The digital loop sensor unit shall be of sufficient sensitivity to detect the smallest licenseable motor vehicle, including motorbikes. The sensor unit shall detect a Honda CT-170 and hold the detection for minimum of four minutes.

2.6 The sensor unit shall be designed to operate in conjunction with three turns of a loop of wire embedded up to 3" (76.2mm) deep in a reinforced concrete roadway. The loop and lead-ins will measure at least 100 megohms above ground and have a minimum inductance of 50 microhenries and a continuity resistance of not more than 2 ohms. Digital sensor unit shall be capable of tuning to an inductance range of 0 to 2000 microhenries.

2.7 Vehicle detection shall be indicated by a single optically isolated solid state output per channel.

2.8 Output circuit shall be an optically coupled output. It shall be a 2N37. Polarity of interface between telemetry and sensor unit must be observed.

2.9 Any size or type of motor vehicle from motorcycle to a high bed tractor-trailer moving over the loop shall be detected and each vehicle shall produce only one output for the length of time the vehicle is over the loop.

2.10 Detection shall be positive for all vehicle speeds 0 to 129km (80 mi.) per hour.

2.11 The sensor unit shall be capable of reliable operations when placed up to 1000 ft. (304.8m) away from loops and connected with type No. 14 AWG, stranded copper wire. The loops will vary in size from 5 ft. x 6 ft (1.52m by 1.83m) up to 18 ft. x 6 ft. (5.49m by 1.83m). Loop system with 1000 ft (304.8m.) of lead-in shall perform with sensitivity to detect and hold the smallest motorbike.

2.12 Each detection channel shall have its own output incandescent indicator lamp and 16 position thumbwheel switch. The thumbwheel switch shall select the sensitivity and mode. The thumbwheel switch shall provide eight sensitivities, .0025% to .33% and 3 modes: off, pulse, and presence.

2.13 In the pulse mode each new vehicle shall produce an output pulse of 225 milliseconds duration. A vehicle remaining on a loop for more than two seconds shall be "tuned out" allowing operation of the loop to other vehicles.

2.14 In the presence mode output duration shall be equal to the percent of time the vehicle is present on the loop. Vehicle detection and hold times shall not be less than 30 minutes.

2.15 Electrical connections from the sensor unit to incoming and outgoing circuits shall be made by one MS type multiple positive connection plug and jack, or equivalent arrangement, to permit rapid replacement with similar existing units without disconnecting or reconnecting individual wires.

2.16 All the tuning adjustments shall be made with controls provided on the sensor unit without requiring movement of the sensor unit.

2.17 These controls shall be identified and it shall not be necessary to remove or change wires or contacts nor to use any tools other than a screw driver in tuning or making sensitivity adjustments.

2.18 A properly tuned sensor unit shall detect all high vehicles (truck) with chassis 4 feet (1.22m) above pavement surface with one contact closure and yet shall not detect vehicles passing in lanes adjacent to loop installation.

2.19 All transistors shall be silicon type. The main logic of the unit shall be a single MOS-LSI chip to simplify the electronics, increase reliability and improve maintainability.

2.20 The sensor unit shall be contained in a rigid high quality metal enclosure providing complete protection to all components and electrical connections.

2.21 During normal detection operation the state of the output indicator shall correspond exactly to the state of the optically coupled output.

2.22 A frequency switch shall be provided to raise or lower the loop oscillator frequency for the elimination of cross-talk between sensor unit, should it ever occur.

2.23 The digital sensor unit shall be provided with a circuit breaker.

2.24 Special circuitry shall be provided so that the sensor unit shall continue in proper operation even though the induction loop is shorted or leaking to ground.

2.25 Induction loops shall be coupled to a transformer to provide for rejection of induction loop lead-in cable noise and shall allow low inductance operation (0 to 50 microhenries).

2.26 A reset shall be provided to reset all channels.

2.27 There shall be a write-on pad mounted on sensor to identify traffic lane with channel indication.

3.0 BASIS OF PAYMENT

This item will be paid for at the contract unit price each for DIGITAL LOOP DETECTOR SENSOR UNIT, channels specified, installed, operating and completely in place.

Terminal boards, cable harness wiring and miscellaneous will not be paid for separately, but shall be considered as incidental to the cost of the item.

CCTV CAMERA STRUCTURE WITH LOWERING DEVICE

A. GENERAL DESCRIPTION

This work shall consist of furnishing and installing a 100-foot or an 80-foot mounting height, as specified in the plans, steel CCTV camera structure complete with foundation and camera lowering device. The structure must be a galvanized steel structure with a concrete foundation. Specifications for the structure are detailed in the section herein. The camera lowering system shall be designed to support and lower a Simultaneous DUAL Analog & IP closed circuit television camera, lens, housing, PTZ mechanism, cabling, connectors and other supporting field components without damage or causing degradation of camera operations. The camera lowering system device and the pole are interdependent; and thus, must be considered a single unit or system. The lowering system shall consist of a pole, and lowering device system with the mounting slot and bolt hole mirrored on 180 degrees of the pole top tenon. The system shall include the suspension contact unit, divided support arm, and a pole adapter for attachment to a pole top tenon, pole top junction box, conduit mount adapter and camera connection box. The divided support arm and receiver brackets shall be designed to self-align the contact unit with the pole center line during installation and ensure the contact unit cannot twist under high wind conditions. For maximum arm strength, round support arms are not acceptable. The camera-lowering device shall withstand wind forces of 100mph with a 30 percent gust factor using a 1.65 safety factor. The lowering device manufacturer, upon request, shall furnish independent laboratory testing documents certifying adherence to the stated wind force criteria utilizing, as a minimum effective projected area, the actual EPA or an EPA greater than that of the camera system to be attached. The camera-lowering device to be furnished shall be the product of manufacturers with a minimum of 5 years of experience in the successful manufacturing of camera lowering systems. The lowering device provider shall be able to identify a minimum of 3 previous projects where the purposed system has been installed successfully for over a one-year period of time each.

The lowering device manufacturer shall furnish an authorized factory representative to oversee the installation contractor’s assembly and testing of the first lowering system onto the pole assembly. The manufacturer shall furnish the applicable DOT engineer documentation certifying that the installation contractor has been instructed on the installation, operation and safety features of the lowering device for the particular project. The contractor shall be responsible for providing applicable maintenance personnel “on site" operational instructions.

(a) SUSPENSION CONTACT UNIT & CONTACT BLOCK

The suspension contact unit shall have a load capacity 600 lbs. with a 4 to 1 safety factor. There shall be a locking mechanism between the fixed and moveable components of the lowering device. The movable assembly shall have a minimum of 2 latches. This latching mechanism shall securely hold the device and its mounted equipment. The latching mechanism shall operate by alternately raising and lowering the assembly using the winch and lowering cable. When latched, all weight shall be removed from the lowering cable. The fixed unit shall have a heavy duty cast tracking guide and means to allow latching in the same position each time. The contact unit housing shall be weatherproof with a gasket provided to seal the interior from dust and moisture. The entire unit shall have a minimum temperature rating of -40 degrees F to +190 degrees F (-40C to 90C).

The prefabricated components of the lift unit support system shall be designed to preclude the lifting cable from contacting the power or video cabling. The lowering device manufacturer shall provide conduit mount adapters for housing the lowering cable. These adapters shall have an interface to allow the connection of a contractor provided 1.25 inch PVC conduit and be located just below the cable stop block at the back of the lowering device. The Contractor shall supply internal conduits in the pole as directed by the Lowering Device provider. The only cable permitted to move within the pole or lowering device during lowering or raising shall be the stainless steel lowering cable. All other cables must remain stable and secure during lowering and raising operations.

The Lowering Device must be specifically equipped with electrical contacts connectors designed for simultaneous Analog (Coax) and Ethernet (IP-CAT5) video transmission along with PTZ control. The Contact Connectors shall be designed for extreme environmental outdoor use.

The female and male socket contact halves of the connector block shall be made of a UL94, V-0 rated thermosetting synthetic rubber. The female barrel contacts and the male pin contacts shall be permanently and integrally encased in this rubber material to ensure optimum protection from moisture and the environment.

All current carrying male pin and female socket/barrel contacts shall be Gold-plated per ASTM B-488 over Nickel plated CA 360 per QQ-N-290m.

The DUAL Analog/Ethernet configuration contact connector shall include:

(7) Specifically designed Male contacts sized a minimum of 0.125 inches while the female contacts shall be at least 0.125 inches I.D. at the contact area. All (7) contacts shall be soldered to #18/1 UL lead wire and affixed with numbered tags. Two of these wires shall be equipped with a factory installed BNC connector for video transmission/connection from the CCTV.

(13) Specifically designed Male contacts sized a minimum of 0.09 inches while the female contacts shall be at least 0.09 inches I.D. at the contact area. Eight of the thirteen contacts shall be soldered to CAT5e Wire end terminated with an RJ45-Male connector. Five of the thirteen contacts shall be soldered to #18/1 UL lead wire and affixed with numbered tags, which may be used for additional camera requirements including but not limited to power, control, alarms or grounds.

All current carrying male pin and female socket/barrel contacts shall be Gold-plated per ASTM B-488 over Nickel plated CA 360 per QQ-N-290m. Each individual female barrel contact shall have a Nickel plated CA 360 sleeve which prevents foreign matter from entering the contact area as well as preclude the possibility of the leaves of the female contact from opening beyond allowable limits and ensure a snug fit around the respective male pins. There shall be at least one contact that is positioned in a manner which will allow it to make first and break last providing optimum grounding performance.

All soldering shall be per IPC J STD-001E. Each individual contact shall be rated for up to 600v and 7A but de-rated according to the wire used in the application. For optimum weatherproofing, each male shall be self-wiping with a shoulder at the base of each male contact so that it will recess into the female block, thereby giving a rain-tight seal to each individual contact when mated. Further, the wire leads from both the male and female rubber contact blocks shall be permanently and integrally molded in the synthetic rubber body. The facility manufacturing the electrical contact connector must comply with Mil Spec Q-9858 and Mil Spec I-45208.

(c) LOWERING TOOL

The camera-lowering device shall be operated by use of a portable lowering tool. The tool shall consist of a lightweight metal frame and winch assembly with factory spooled stainless steel aircraft cable, a quick release cable connector, an adjustable safety clutch and a variable speed industrial duty electric drill motor. This tool shall be compatible with accessing the support cable through the hand hole of the pole. The lowering tool shall attach/secure to the pole with one single bolt. The tool will support itself and the load during lowering/raising operations. The winch assembly shall include an automatic breaking system that provides a means to prevent freewheeling when loaded. The lowering tool shall be delivered to the applicable DOT engineer upon project completion. The lowering tool shall have a reduction gear to reduce the manual effort required to operate the lifting handle to raise and lower a capacity load. The lowering tool shall be provided with an adapter for operating the lowering device by a portable drill using a clutch mechanism. The lowering tool shall be equipped with a positive breaking mechanism to secure the cable reel during raising and lowering operations and prevent freewheeling. The manufacturer shall provide a variable speed, heavy-duty reversible drill motor, clutch and one lowering tool for every ten camera lowering device poles. The lowering tool shall be made of durable and corrosion resistant materials, powder coated steel, galvanized steel, heavy duty aluminum or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment

(b) CAMERA JUNCTION BOX

The camera junction box is essential for proving both a mounting location for the CCTV as well as an interface compartment for wire leads from the lowering device to the CCTV or applicable surge suppression module. The camera junction box shall be of two piece clamshell design with one removable hinge side and one latch side with single toggle bolt to facilitate easy access. The general shape of the box shall be cylindrical to minimize the effective projected area. The Camera Junction Box shall be cast aluminum with stabilizing weights on the outside of the box to increase room on the interior. The box shall be capable of having up to 40 pounds of stabilizing weights. The bottom of the Camera Junction Box shall be drilled and tapped with a 1-1/2" NPT/Female thread to accept industry standard dome housings and be able to be modified to accept a wide variety of other camera mountings. The junction box shall be gasketed to prevent water intrusion. The bottom of the box shall incorporate a screened and vented hole to allow airflow and reduce internal condensation.

(c) MATERIALS

All pulleys for the camera lowering device and portable lowering tool shall have sealed, self-lubricated bearings, oil tight bronze bearings, or sintered- oil impregnated, bronze bushings. The lowering cable shall be a minimum 1/8-inch diameter stainless steel aircraft cable with a minimum breaking strength of 1740 pounds with (7) strands of 19 wire each.

All electrical and video Coaxial connections between the fixed and lowerable portion of the contact block shall be protected from exposure to the weather by both a gasket on the bottom side of the bell housing enclosure as well as the "O" ring shoulders at the base of each male contact pin to prevent degradation of the power/signal contacts.

The interface and locking components shall be made of stainless steel and/or aluminum. All external components of the lowering device shall be made of corrosion resistant materials, powder coated, galvanized, or otherwise protected from the environment by industry-accepted coatings to withstand exposure to a corrosive environment.

In the event the CCTV is a non-dome or otherwise not properly weight balanced and plumb, the Camera Manufacturer shall provide weights and /or counterweights as necessary to assure that the alignment of pins and connectors are proper for the camera support to be raised into position without binding.

The Contractor shall provide any applicable power/signal connectors and weatherproof interface couplers for attachment to the bare leads and RJ-45 Male in the pole top and/or camera junction boxes in a manner acceptable to the project engineer.

The Contractor shall provide appropriate length of applicable power/signal cable in one continuous run from the respective equipment cabinet to the pole top junction box of each lowering device pole. The Contractor is also responsible for providing a CAT5e cable from the CCTV unit to the CCTV cabinet for future use.

(d) CAMERA LOWERING SYSTEM POLE

DESIGN: Design shall be in accordance with the 2009 edition of AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals including all addendums. Minimum Loading requirements shall be based on an isotach wind velocity for the area of installation according to the current AASHTO isotach wind chart. Calculations and detailed drawings shall be submitted demonstrating compliance with the AASHTO specification.

FABRICATOR: The Fabricator shall be certified under Category I, "Conventional Steel Structures" as set forth by the American Institute of Steel Construction Quality Certification Program. Proof of this certification will be required prior to bid opening to ensure that the fabricator has the personnel, organization, experience, procedures, knowledge, equipment, capability and commitment to fabricate quality pole structures.

WELDING: All welding shall be in accordance with Sections 1 through 8 of the American Welding Society (AWS) D1.1 Structural Welding Code. Tackers and welders shall be qualified in accordance with the code. Tube longitudinal seam welds shall be free of cracks and excessive undercut, performed with automatic processes, and be visually inspected. Longitudinal welds suspected to contain defects shall be magnetic particle inspected. All circumferential butt-welded pole and arm splices shall be ultrasonically or radiographically inspected.

MATERIAL CERTIFICATIONS: All materials and products shall be manufactured in the United States of America, and comply with ASTM or AASHTO specifications. Mill certifications shall be supplied as proof of compliance with the specifications.

PERFORMANCE CALCULATIONS: The pole shall be designed to support the specified camera and accessories. Close consideration must be given to the effective projected area of the complete lowering system and camera equipment to be mounted on the pole along with the weight when designing the pole to meet the specified deflection performance criteria. The pole top deflection shall not exceed one inch in a 30-mph (non-gust) wind. The calculations shall include a pole, base plate, and anchor bolt analysis. The pole calculations shall be analyzed at the pole base, at 5-ft. pole intervals/segments and at any other critical pole section. At each of these locations, the following information shall be given:

1) The pole's diameter, thickness, section modulus, moment of inertia, and cross sectional area.

2) The centroid, weight, projected area, drag coefficient, velocity pressure, and wind force of each pole segment.

3) The axial force, shear force, primary moment, total moment, axial stress, bending stress, allowable axial stress, allowable bending stress, and combined stress ratio (CSR).

4) The pole's angular and linear deflection.

POLE SHAFT: These Poles shall be of multi-piece construction. All structures with pole shaft diameters of 26 inches or less shall be round; pole shaft diameters greater than 26 " may be round or multi-sided. The shaft shall have a constant linear taper of 0.14 in/ft, and contain only one longitudinal seam weld. Circumferential welded tube butt splices and laminated tubes are not permitted. Longitudinal seam welds within 6 inches of complete penetration pole to base plate welds shall be complete penetration welds. The shaft shall be hot dip galvanized per the requirements of the contract documents. The interior diameter of the shaft regardless of pole height shall be at least 5 inches to accommodate lowering device requirements.

HAND HOLE for WINCH OPERATION: The hand hole opening shall be reinforced with a minimum 2-inch wide hot rolled steel rim. The nominal outside dimension is 6 inches x 27 inches. The handhole shall have a tapped hole for mounting the portable winch thereto as shown on the drawings and include a cover. Unless otherwise noted on the plans, the bottom lip of the handhole shall be located on the shaft between 30"-33" from the baseplate.

POLE TOP TENON: The pole shall have a custom plate mounted tenon that allows the field modification of the arm/camera orientation up to 360 degrees. With this design the IDOT engineer can make slight orientation modifications to the camera mount to allow optimum viewing in case of future road development, change in terrain or a change in the viewing needs priority. The tenon shall have mounting holes and slot as required for the mounting of the camera-lowering system. The tenon shall be of dimensions necessary to facilitate camera lowering device component installation. Each lowering device slot shall be parallel to the pole centerline for mounting the lowering device. There shall be a mounting slot for each required camera lowering device. Unless otherwise noted, with a lowering device, the mounting slots shall be 180 degrees apart.

CABLE SUPPORTS / Electrical Cable Guides and Parking Stand (Eyebolts): Top and bottom electrical cable guides shall be located within the pole aligned with each other. One cable guide-strain relief ring shall be positioned 2 inches below the winch operation handhole and the other shall be positioned 1 inch directly below the top of tenon. A parking stand ring shall be positioned no more than 2 inches below the top of the handhole on the inner portion of the handhole frame and located at 90, 180 and 270 degrees. Note Drawings for details.

BASE PLATE: Base plates shall conform to ASTM A36 or A572 Grade 50. Plates shall be integrally welded to the tubes with a telescopic welded joint or a full penetration butt weld with backup bar. Plates shall be hot dip galvanized per the requirements of the contract documents.

ANCHOR BOLTS: Anchor bolts shall conform to the requirements of ASTM F1554 Grade 55. The upper 12 inches of the bolts shall be hot dip galvanized per ASTM A153. Each anchor bolt shall be supplied with two hex nuts and two flat washers. The strength of the nuts shall equal or exceed the proof load of the bolts.

Method Of Measurement. CCTV camera structures shall be counted, each with foundation, lowering device and all appurtenances installed.

Basis Of Payment. This item shall be paid at the contract unit each for CLOSED CIRCUIT TELEVISION CAMERA STRUCTURE, GALVANIZED STEEL, of the mounting height specified.

CLOSED CIRCUIT DOME VIDEO CAMERA

1. Description:

This item shall consist of furnishing and installing an integrated Closed-Circuit Television (CCTV) Dome Camera Assembly as described herein and as indicated in the Plans.

2. Definitions:

CCTV Dome Camera	The complete camera assembly including the camera, PTZ mechanism, upper and lower dome housings, and any mounts.
Dome, lower dome, dome bubble	Clear dome (bubble) on the lower portion of the CCTV dome camera which the camera views through
Dome housing, upper dome	The upper portion of the CCTV dome cameras which houses the camera and PTZ Mechanism.
PTZ	The motorized Pan, Tilt and Zoom mechanism
Camera	The color camera

3. Materials:

3.1 General. The CCTV Dome Color Camera shall be a rugged, non-pressurized, outdoor surveillance domed camera system. The CCTV Dome Camera shall be designed to perform over a wide range of environmental and lighting conditions and automatically switches from color daytime to monochrome nighttime operation. For compatibility with the existing CCTV cameras, the dome cameras shall be manufactured by Phillips/Bosch (AutoDome Series 600) or equal approved by the Engineer. The equivalent shall comply with all the requirements herein and shall provide the same operation/functionality as the installed cameras without the use of any external devices for the modification/translation of video and PTZ commands.

All equipment and materials used shall be standard components that are regularly manufactured and utilized in the manufacturer's system.

The manufacturer shall be ISO 14001 Certified. The manufacturer's quality system shall be in compliance with the I.S./ISO 9001/EN 29001, QUALITY SYSTEM. The manufacturer shall provide a three year (3) warranty. The manufacturer shall pay inbound and outbound shipping charges during the warranty period for products returned as warranty claims. The manufacturer shall also provide an advance exchange program for warranty claims.

The warranty period shall begin on the date of final acceptance of the video distribution system. This warranty shall include repair or replacement of all failed components via a factory authorized repair facility. All items sent to the repair facility for repair shall be returned within two weeks of the date of receipt at the facility. The repair facility location shall be in the United States. Any extended warranty coverage required to comply with the specified warranty period shall be provided as a part of this pay item at no additional cost to the State.

3.2 Physical construction. The CCTV Dome Camera shall be provided in a NEMA 4X or IP66 certified, rugged, weather-resistant package. The CCTV Dome Camera shall also comply with the following requirements:

Environmental	Requirement
IP Rating	IP 66
Weight (max.)	10 lbs
Overall Dimensions	10" dia. x 14"
Humidity	0 to 100%
Operating temperature	-40ºC to 50ºC
Mount	1 ½" NPT

The CCTV dome camera shall be equipped with a fan and heater controlled by a thermostat. The heater shall prevent internal fogging of the lower dome throughout the operating temperature range of the camera.

An optional rugged clear dome bubble shall be available from the CCTV camera manufacturer. The rugged dome shall be made from 3mm thick polycarbonate, designed to meet stringent strength standards without compromising optical clarity. The dome, by itself, shall withstand a 100 foot-pound impact. This energy is equivalent to that of a 10 lb sledgehammer being dropped from a height of 10 feet. The dome, when installed in the CCTV camera, shall exceed the UL 1598 horizontal impact standard for lighting fixtures, by a factor of 10. The submittal needs to indicate compliance with this requirement.

3.3 Power. The CCTV Dome Camera shall be designed to operate from a 120v power source. The appropriate power supply, if required for the CCTV Dome Camera to operate, shall be included as a part of this item. The power requirements for the camera shall comply with the following:

Electrical	Requirement
Voltage	18 to 30 VAC
Load	25 VA
Heater Load	45 VA
Listing	UL Listed
FCC	Class B

Surge Suppression Requirements

Source	Minimum Requirements
Video	Peak current 10 kA (Gas Tube Arrester), peak power 1000 W (10/1000 µ)
RS-232/485, Biphase	Peak current 10 A, peak power 300 W (8/20 µ)
Alarm Inputs	Peak current 17 A, peak power 300 W (8/20 µ)
Alarm Outputs	Peak current 2 A, peak power 300 W (8/20 µ)
Relay Outputs	Peak current 7.3 A, peak power 600 W (10/1000 µ)
Power Input (Dome)	Peak current 7.3 A, peak power 600 W (10/1000 µ)
Power Output (Alarm Power Supply)	Peak current 21.4 A, peak power 1500 W(10/1000 µ)

3.4 Camera.

The CCTV Dome Camera shall incorporate a solid state CDD imaging camera with the following requirements.

3.4.1 The camera shall automatically switch from daylight color operation to a higher sensitivity nighttime monochrome mode when light levels fall below a user adjustable threshold level.

3.4.2 The camera shall provide a selectable slow shutter (frame integration) function that increases the camera's sensitivity up to 50 times by reducing the shutter speed as well as fully automatic.

3.4.3 Digital image stabilization shall be provided using electronic compensation that filters out vibrations caused by wind and other environmental conditions.

3.4.4 The camera shall feature a Sodium Vapor White Balance mode.

The camera shall also comply with the following requirements:

Camera	**Requirement**
Imager	1/4" HAD CCD
Effective Pixels	768H x 494V
Zoom Lens Power (Optical only)	36x
Aperture	*f*1.6 to *f*4.5
Focus	Auto / Manual
Iris	Auto / Manual
Max. Field of View Horizontal	57º
Video Output	1.0v +/- 0.07v
Gain Control	Auto / off
Synchronization	Internal / AC line lock, phase adj. via remote control, V-Sync
Digital Zoom	12x
Horizontal Resolution	550 TVL
Signal – Noise Ratio	>50dB
White Balance	Auto / Manual, 2000 K to 10,000K
Shutter Speed	1/1 to 1/10,000 sec

Min Illumination		**Values in lux**
Day	SensUp (Off)	0.66
	SensUp (On)	0.04
Night	SensUp (Off)	0.104
	SensUp (On)	0.0052

3.5 PTZ Mechanical

The CCTV dome camera shall have an integrated motorized PTZ mechanism as specified herein and shall be compatible and coordinated with the control system described elsewhere herein. The camera's 360° pan rotation shall is divided into 16 independent sectors with 16-character titles per sector. Any or all of the 16 sectors may be blanked from the operator. In addition to the blanking function, a privacy masking feature shall be provided that allows creation of up to six (6) rectangular masks that prohibit areas of the field of view from being seen even if the camera is panned, tilted, or zoomed.

Mechanical (Dome Drive)		**Requirement**
Pan		360º
Tilt		Up to 18º above horizon
Continuous PTZ Operation		Yes
Pre-position speed	Pan	360º/sec
	Tilt	200º/sec
Accuracy	Pan	+/- 0.1º
Variable speed	Pan	80º/sec or 150º/sec
	Tilt	40º/sec

3.6 Functionality

Camera Commands

3.6.1 The camera shall allow the storage of up to 99 preset scenes with each preset programmable for 16 character titles. A tour function shall be available to consecutively display each of the preset scenes for a programmed dwell time. Any or all of the presets may be included or excluded from the tour.

3.6.2 The camera shall be capable of recording two (2) separate tours of an operator's keyboard movements consisting of, tilt, and zoom activities for a total combined duration time of 15 minutes. Recorded tours can be continuously played back.

3.6.3 When an operator stops manual control of the camera, and a programmed period of time is allowed to expire, the camera will execute one of the following programmable options: 1) return to preset #1 or 2) return to the automated tour previously executed or 3) do nothing and remain at the present position.

3.6.4 The camera shall ensure that any advanced commands required to program the camera are accessed via three levels of password protection ranging from low to high security.

3.6.5 The camera system shall provide a feature that automatically rotates, or pivots, the camera to simplify tracking of a person walking directly under the camera.

3.6.6 The camera's 360° pan rotation shall is divided into 16 independent sectors with 16-character titles per sector. Any or all of the 16 sectors may be blanked from the operator.

3.6.7 In addition to the blanking function, a privacy masking feature shall be provided that allows creation of up to six (6) rectangular masks that prohibit areas of the field of view from being seen even if the camera is panned, tilted, or zoomed

Visual Effects	Requirement
Sectors/Zones	8
Titling	20 characters
Max Presets	99
Motion Detection	Yes
Password Protection	Yes
On Screen Configuration Menus	Yes
Image Stabilization	Yes
Preset Tour / max presets	
Recorded Variable PTZ Tour	2
Auto Flip	Yes
Auto Return to preset after operator inactivity	Yes
Window Blanking	
Quantity	6
Grey out	Yes
Alarms	Yes

3.6.8 The manufacturer shall fully document and provide to the Department the communication protocol implemented by the CCTV dome camera. This protocol shall be open and allow third-party development of control software. If the current protocol is not NTCIP compliant, the manufacturer shall supply upgrades to make the software compliant in the future at no cost to the Department.

3.6.9 Diagnostic software shall be provided with each CCTV camera which shall allow all camera functions accessible via a Windows XP based PC. A RS232 cable, or a USB cable if available, shall be provided to connect to CCTV dome camera assembly. A copy of the diagnostic software shall be supplied for each CCTV camera. The program shall be capable of configuring and controlling the CCTV dome camera assembly and its functions (position, zoom, focus, iris, power, color balance, etc.) from within it. This includes storing and recalling preset positions for fast system configuration.

3.7 Interface

Control System**.** Camera commands shall be transmitted over twisted pair, RS 232, RS 422 and RS 485. The method of transmission shall be user selectable.

The camera shall provide four (4) normally open or normally closed alarm input contacts and one (1) relay output. Any or all of the input contacts may be programmed upon activation to automatically move the camera to any preposition location, close the output relay for a programmed period of time, and display an alarm indication on the on-screen display of the display monitor.

4. Testing:

The Contractor shall test each CCTV Dome Camera Assembly in the presence of the Engineer after the camera is installed. This test may be done locally at the camera support structure.

5. Product Support:

The manufacturer shall provide technical support via email, fax and toll-free telephone. The above forms of support shall be provided Monday through Friday, 8:00am to 8:00pm EST.

6. Installation:

The Contractor shall submit shop drawings for the camera mounting adapter prior to installation of the camera on the pole.

7. Measurement:

Closed-Circuit Television (CCTV) Dome Cameras shall be counted as each upon successful installation and completion of the testing describer herein for payment.

8. Basis of Payment:

This item will be paid for at the contract unit price each for CLOSED CIRCUIT TELEVISION DOME CAMERA, which shall be payment in full for all material and work as specified herein.

CCTV EQUIPMENT CABINET, STRUCTURE MOUNTING

Description. The Contractor shall provide a closed-circuit television cabinet on a 50‘ or 100’ structure as shown in the plans and specified herein.

Materials.

General. The Contractor shall furnish the following items as specified.

CCTV Cabinet. The CCTV Cabinet shall be a Hoffman Enclosures Model A20H1610SS6LP, Electromate Enclosures Model E-20H1610SSLP, or approved equal. The cabinet shall be NEMA 4X compliant.

The nominal dimensions of the cabinet shall be 20 inches high by 16 inches wide by 10 inches deep.

The cabinet shall be fabricated of 14 gauge Type 304 or Type 316L stainless steel. All seams shall be continuously welded and ground smooth with no holes or knockouts. The cabinet shall be fabricated with a rolled lip around three sides of the door and on all sides of the enclosure openings to exclude liquids and contaminants. A stainless steel door clamp assembly shall assure a watertight seal. A seamless gasket shall be included to assure a watertight and dust-tight seal.

The cabinet shall have provisions for padlocking in the closed position. The lock shall be Corbin #2 and two keys shall be supplied to the Department with each lock. The keys shall be removable in the locked position only.

A data pocket of high impact thermoplastic material shall be provided. The nominal dimensions of this pocket shall be 12 inches by 12 inches.

Collar studs shall be provided for mounting the stainless steel backboard panel.

The cabinet shall be unpainted. Cover, sides, top, and bottom shall have a smooth brushed finish.

The cabinet shall mount on the structure, using the fabricated bolt pattern.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall prepare and submit a shop drawing detailing the complete closed-circuit television cabinet installation. The shop drawings shall identify the installation and specifications of all components to be supplied, for approval of the Engineer.

The Contractor shall install the CCTV cabinet as indicated in the Plans. The Contractor shall verify the mounting criteria and dimensions based upon the structure or pole being provided. Any adjustments in the dimensions for the mounting brackets shall be approved by the Engineer.

Basis of Payment. This work shall be paid for at the contract unit price each for CLOSED CIRCUIT TELEVISION CABINET as specified.

CCTV EQUIPMENT, FIBER OPTIC DISTRIBUTION

Effective: September 1, 2013

Description.

This item shall consist of furnishing and installing equipment for the control and distribution of CCTV video from the CCTV camera to and at a Video Collection Point (VCP). Transmission for the video and control signals shall be by fiber optic cable as specified elsewhere herein and as indicated in the plans.

Construction Requirements

General. The Contractor shall prepare and submit a shop drawing detailing the complete closed-circuit television cabinet equipment installation. The shop drawings shall identify the installation and specifications of all components to be supplied, for approval of the Engineer. Particular emphasis shall be given to the cabling and the interconnection of all of the components.

The Contractor shall demonstrate a prototype assembly using the proposed components. This demonstration shall take place at the D1 Headquarters in Schaumburg. These conformance tests shall be completed prior to the delivery of any completed assemblies to the project site. Any deviations from these specifications that are identified during this testing shall be corrected prior to shipment of the assembly to the project site.

Appropriate connectors shall be furnished and installed to interface the in-cabinet components to the integrated dome camera assembly. The Contractor shall mount the in-cabinet components in the equipment cabinet and connect them to AC power, communications, and video feeds.

Testing. The Contractor shall test each installed CCTV Cabinet Equipment. The test shall be conducted from the field cabinet using the standard communication protocol and a laptop computer. The Contractor shall verify that the camera can be fully exercised and moved through the entire limits of Pan, Tilt, Zoom, Focus and Iris adjustments, using both the manual control and presets. In addition, a video monitor and an oscilloscope shall verify that the video signal meets or exceeds the specified requirements.

The Contractor shall repeat the test at the communications shelter associated with the CCTV camera. This test confirms the distribution portion of the video circuit, that is, the portion of the circuit from the CCTV camera to the fiber optic transceiver.

The Contractor shall maintain a log of all testing and the corresponding results. A representative of the Contractor and a representative of the Engineer shall sign the log as witnessing the results. Records of all tests shall be submitted to the Engineer prior to accepting the installation.

Documentation. One copy of all operations and maintenance manuals for each CCTV component shall be delivered for each assembly installed. In addition, full documentation for all software and associated protocols shall be supplied to the Department on a CD-ROM. The Department reserves the right to provide this documentation to other parties who may be Contracted with in order to provide overall integration or maintenance of this item.

Warranty. The Contractor shall warranty all materials and workmanship including labor for a period of two years after the completion and acceptance of the installation, unless other warranty requirements prevail. The warranty period shall begin when the Contractor completes all construction obligations related to this item and when the components for this item have been accepted, which shall be documented as the final completion date in the construction status report. This warranty shall include repair and/or replacement of all failed components via a factory authorized depot repair service. All items sent to the depot for repair shall be returned within two weeks of the date of receipt at the facility. The depot location shall be in the United States. Repairs shall not require more than two weeks from date of receipt and the provider of the warranty shall be responsible for all return shipping costs.

The depot maintainer designated for each component shall be authorized by the original manufacturer to supply this service. A warranty certificate shall be supplied for each component from the designated depot repair site indicating the start and end dates of the warranty. The certificate shall be supplied at the conclusion of the system acceptance test and shall be for a minimum of two years after that point. The certificate shall name the Department as the recipient of the service. The Department shall have the right to transfer this service to other private parties who may be contracted to perform overall maintenance of the facility.

Materials.

Equipment Installation. The installation and mounting of the CCTV equipment shall be fully coordinated with the enclosure or co-location.

Co-location of CCTV equipment. The CCTV equipment maybe co-located within a traffic signal controller, or other equipment as indicated.

The equipment shall be securely mounted on a mounting back panel or on a corrosion resistant DIN rail if equipment is configured as such.

Closed Circuit Television Camera Power Supply.

Light Tower Installation. The power supply shall be as required and manufactured by the CCTV camera manufacturer. The power supply shall be mounted as described elsewhere herein and as indicated in the plans. The CCTV equipment shall include video, control, and power surge suppression as described herein.

Non-Light Tower Installation. The Closed Circuit Television Camera Power Supply shall supply power to the camera dome assembly. The requirements include:

Input voltage	120 VAC ± 10%
Output voltage	24 VAC ± 10%
Operating Temperature Range:	-40ºC to +70ºC (minimum)
Storage Temperature Range:	-40ºC to +75ºC (minimum)

The power supply shall include an AC power indicator with power on/off switch. All outputs shall be fused. The power supply shall be sized for the dome units being supplied, considering pan/tilt, heating, and blower requirements, and shall not be less than 100 VA.

Over-voltage Protection. Over-voltage protection shall be provided on the power conductors, camera control conductors, and the video cables. The specific protection is based on the elements being protected.

Incoming Power Protection. The incoming power shall be protected with a filtering surge protector that absorbs power line noise and switching transients. The specified performance shall be as follows:

Peak current	20 kA (8x20 µs waveshape)
Life Test	5% change
Clamp voltage	280 V typical @ 20 kA
Response time	≤5 ns
Continuous service current	10 amps max. 120 VAC/60 Hz
Operating Temperature	-40ºC to +75ºC (minimum)
Nominal dimensions	7.15 inches by 3.13 inches by 2.3 inches

Video Cable Protection. The coaxial cable from the camera shall be protected with gas tubes and silicon avalanche devices. The units shall include re-settable fuses to protect against sneak currents. Specific requirements include:

Frequency	0 to 20 MHz
Peak surge current	20 kA (8x20 µs waveshape)
Technology	Hybrid, solid-state
Attenuation	0.1 dB at 10 MHz
Response time	≤1 ns
Protection	Line-to-shield
Input/output connectors	BNC
Impedance	75 ohms
Temperature range	-40ºC to +75ºC (minimum)
Humidity	0% to 95% (non-condensing)
Clamping voltage	6 V
Nominal dimensions	4.5 inches by 1.5 inches by 1.25 inches

The video cable protector shall be UL listed.

Camera Control Cable Protection. The camera control cable protector shall protect the RS-422/RS-485 signal leads going to the camera dome assembly. Specific requirements include:

Technology	Hybrid, solid-state
Response time	≤5 ns
Protection	Line-to-ground
Input/output connectors	terminal block
Temperature range	-40ºC to +75ºC (minimum)
Humidity	0% to 95% (non-condensing)
Clamping voltage	7.25 V (maximum); ≤7.0 V (typical)
Nominal dimensions	4.5 inches by 3.3 inches by 1.8 inches

The protector shall protect a minimum of four conductors. [Transmit Data (2 wires) and Receiver Data (2 wires)]

Both Light Tower and Non-Light Tower installations shall include the appropriate equipment for the local control and video monitoring of the video without necessitating the need to disconnect and re-connect cables for servicing or camera set-up.

Fiber Optic Transceiver Pair

Fiber Optic Video Transceiver Pair. The CCTV Cabinet Equipment shall include a matched pair fiber optic video transceiver pair as described herein. To maintain compatibility with the previously installed transceivers, the transceiver pair shall be manufacturer by Meridian Technologies, Series DV-1W 1MPS, IFS VT/VR1900 Series, or approved equal by the Engineer. The Approved equal shall be 100% interchangeable with the existing units.

Fiber Optic Video Transmitter. The fiber optic video transmitter shall provide simplex transmission of NTSC video from the CCTV cabinet and duplex communications of camera-control, asynchronous data. Optic video and data transmission shall use one single mode fiber operating in the 1310/1550 nm windows using simple wavelength division multiplexing.

Mechanical and environmental requirements include the following:

Nominal dimensions:	7 inches by 5 inches by 1.5 inches
Operating Temperature Range:	-40ºC to +70ºC (minimum)
Storage Temperature Range:	-40ºC to +75ºC (minimum)
Relative Humidity Range	0% to 95% (non-condensing)
MTBF	75,000 hours (minimum)

Optical requirements include:

Connector:	ST
Optical Power Budget:	15 dB (minimum) using 9/125 µm single mode fiber
Operational Wavelengths:	WDM using1310/1550 nm and a single fiber

Video/data requirements include:

Video connector	BNC
Data connector:	9-pin EIA RS-232, 25-pin EIA RS-232 connector, or terminal block
Data rates	1200-9600 bps, asynchronous
Input signal	0.5 – 2.0 V pk-pk (1 V nominal)/75 ohms impedance
Bandwidth	5 Hz – 7.0 MHz (minimum)
Differential Gain	≤5%
Differential Phase	≤5º
Tilt	≤1%
Signal-to-Noise Ratio	50 dB with 10 dB of attenuation

The equipment shall operate from 120 VAC and include a power supply manufactured by the transceiver manufacturer. Power requirements shall not exceed 15 watts.

The fiber optic video Receiver. The receiver shall receive optical simplex transmission of NTSC video from the CCTV cabinet and shall provide duplex optical communications of camera-control, asynchronous data. Optic video and data transmission shall use one single mode fiber operating in the 1310/1550 nm windows using simple wavelength division multiplexing.

Mechanical and environmental requirements include the following:

Nominal dimensions:	7 inches by 5 inches by 1.5 inches
Operating Temperature Range:	0ºC to +70ºC (minimum)
Storage Temperature Range:	0ºC to +75ºC (minimum)
Relative Humidity Range	0% to 95% (non-condensing)
MTBF	75,000 hours (minimum)

Optical requirements include:

Connector:	ST
Optical Power Budget	15 dB (minimum) using 9/125 µm single mode fiber
Operational Wavelengths:	WDM using1310/1550 nm and a single fiber

Video requirements include:

Connector	BNC
Input signal	0.5–2.0 V pk-pk (1 V nominal)/75 ohms impedance
Bandwidth	5 Hz – 7.0 MHz (minimum)
Differential Gain	≤5%
Differential Phase	≤5º
Tilt	≤1%
Signal-to-Noise Ratio	50 dB with 10 dB of link attenuation

The receivers shall operate from 120 VAC. Two, 7 slot, 19” rack mount chassis with redundant power supplies shall be included in this item to be installed at the receiving location.

Video Distribution Amplifier

Video distribution amplifiers shall be high performance, high impedance design with an input loop-through connection. The amplifier shall include adjustable signal gain, peaking/sharpness controls, and cable equalization. The distribution amplifiers shall meet the following requirements:

REQUIREMENT	CRITERIA
Bandwidth	29MHZ (-3DB) MINIMUM
Gain	-3DB TO +3DB ADJUSTABLE (0.7VP-P TO 1.5VP-P OUTPUT WHEN INPUT LEVEL IS 1.0VP-P)
Input levels	0.4V TO 2.0V WITH NO OFFSET AT UNITY GAIN
Connectors	BNC
Impedance	75 OHMS
Return loss	GREATER THAN 35DB AT 5 MHZ
Differential phase error	+/- 0.1º TO 5 MHZ
Differential phase error	+/- 0.1% TO 5 MHZ
Frequency response	+/- 0.1 DB TO 5MHZ
Input connections	1 COMPOSITE VIDEO
Output connections	FOUR (4) MINIMUM, AS INDICATED ON PLANS, ONE (1) COMPOSITE LOOP-THROUGH

The distribution amplifiers shall be rack mounted in 3 RU rack mounted frame with an integral power supply. Multiple single channel video distribution amplifiers placed on or fastened to a rack mount shelve will not be acceptable. Corded modular power supplies will not be acceptable.

Video Codec

Video Encoders and Decoders. Video encoders and decoders (codecs) shall be dedicated hardware devices, and except for differences between encoders and decoders they shall all of the same type from the same common manufacturer. The codec shall be a single video channel type to transfer “full motion” 30 frame-per-second high quality D1 color video via H.264, MPEG-4, and MPEG-2 video compression at up to 20 Megabits per second. The units shall operate to produce a robust data communications stream that shall allow for both video and audio transmission and shall be immune to timing disruptions in the existing IP multi-cast system.

The units shall be rack-mountable, or single unit chassis for single unit installation complete with power supplies as required, operating from a 120-volt single phase AC power input. Unit mounted in VCPs or other control building shall include a standard 19” rack with dual redundant power supplies.

Encoder units shall accept NTSC video BNC input, Ethernet RJ-45 communications, and RJ45 serial data input connections.

The CODEC encoders shall be Optelecom-NKF series C-60 E-MC, to be compatible the existing decoders. Minimum Firmware Version v4.6.3 Substitutions or deviations will not be acceptable.

The encoders shall interface the serial communications port of the CCTV camera assembly through the fiber optic video link where indicated. Using the Ethernet port on the encoder and its IP address, commands shall be exchanged between the camera control computer at the Communications Center and the serial port of the CCTV camera.

Materials shall be supplied to satisfy the following:

VIDEO	Requirements
Video channels	1x PAL/NTSC (Auto/PAL/NTSC)
Input level	1 Vpp (±3 dB)
Compression algorithm	H.264 BP (ISO/IEC 14496-10) MPEG-2 (ISO/IEC 13818-2), MJPEG,MPEG-4 (ISO/IEC 14496-2, ISMA comp.)
Type of streaming	UDP/IP (multi- and/or unicast)
Number of output streams	Up to 20
Input impedance	75Ω/Hi-Z selectable
Video Motion Detection	Yes (user-defined masking)
Encoding latency	<130 ms typ.
Resolution	D1, ½D1, 2CIF, CIF, QCIF, VGA
GOP structure	I, IP (selectable/user profiles)
Frame rate	1 to 30 fps
Quad streaming	1 D1@30fps H264 + D1@30fps MPEG-2+ D1@ 30fps MPEG-4 + CIF@1fps MJPEG
Output data rate	up to 20 Mb/s (CBR or VBR selectable/user profiles)
Video settings	User profiles, contrast, brightness, color saturation, hue, sharpness
On Screen Display (OSD)	3x Text lines (configurable: position, color, border/outline color, font size),1x image in BMP, GIF, or JPEG format (configurable:position, scaling)
Live View Encoder (MJPEG)	HTTP, FTP pull
Connector type	BNC 75Ω (gold plated center pin)

DATA	Requirements
Number of channels	2 (full-duplex)
Number of streams	2x 3 (multi- and/or unicast)
Interfaces	1x RS232
	1x RS422/485 (2- or 4-wire)
Stream	TCP/UDP/MX configurable
Data rate	300 b/s to 230.4 kb/s
Connector type	RJ45

TRANSMISSION	Requirements
Number of interfaces	1
Interface 10/100Base-TX	Fast Ethernet
	Auto Negotiation, half-duplex/full-duplex, 10/100 Mb/SFP option
	Empty SFP slot for 100 Mbps SFP device
Protocols	H. 264 BP, MPEG-4 ES, MPEG-2 TS, MPEG-2 ES, (M)JPEG, RTP, RTCP, RTSP, TCP, UDP, IP, DHCP, IGMPv2,
	(S)NTP, MX/IP, HTTP, SNMP v2, FTP, TelNet, DiffServ, SAP, UPnP
Connector type	RJ45

Management	
LED status indicators	
DC	Power-on indicator (green)
NV	No video on input (red)
SYNC	All links are operational (green); failure in RX stream(s) (yellow); failure in TX stream(s) (red)
Ethernet port	Green LED: on=100 Mb, off=10 Mb; Amber LED: on=link okay, flashes with activity
Network Management & Control	SNMP v2, MX™, HTTP API, HTML (password protected)

Power	
Power consumption	<5W
Rack-mount units	MC 10 and MC11 power supply cabinets
Stand-alone units (/SA)	11 to 19 VDC (PSA-12 DC/25 or PSR-12 DC)

ENVIRONMENTAL	Requirements
Operating temperature	-40° F to +165° F (-40 °C to +74 °C)
Relative humidity	<95%,no condensation.

The encoders and decoders shall be UL listed and be type-accepted to 47 CFR (FCC), Part 15, Type A.

The Codecs shall be the standard product of an established North American manufacturer. The manufacturer shall have been in business for a minimum of 7 years. The manufacturer shall provide a minimum of a twelve (12) month warranty from the date of installation. The manufacturer shall provide technical support via email, fax and telephone. The above forms of support shall be provided Monday through Friday, 8:00am to 5:00pm EST. The Manufacturer shall also have a repair facility within North America.

The units shall be 19-inch rack-mountable, complete with power supplies as required for the rack configurations indicated on the plans, operating from a 120-volt single phase AC power input

The codecs shall be fully capable of transmitting the PTZ commands of the CCTV camera manufacturer being furnished under this contract as well as existing Philips/Bosch, Pelco, Vicon and Cohu camera commands. Serial data will be transmitted over TCP-IP. Each serial port must support IP addressing with the ability to select the appropriate IP socket number. The codecs must provide the ability to establish an IP connection directly from a workstation to any encoder IP address and socket number to pass serial data. Transmission of serial data must be independent of the video stream. Any serial data conversion required by the codec to communicate to the camera shall be included in this pay item and shall not be paid for separately.

The Encoder/Decoder serial data port must support Multicast data to broadcast a single serial data input to multiple remote encoder serial data port recipient. Bi-directional data must be supported on the codecs.

A demonstration of this low speed serial data transfer shall be required before material submittal approval is given. See submittal requirements in this Special Provision.

Codec operation and management.

Each unit must support a local console accessible using one of the serial interfaces to provide access to all configuration menus of the product including the initial IP address configuration as well as for troubleshooting purposes. The interface must be menu driven for novice users.

All units (encoders and decoders) must support SNMPv2 management protocol to provide the ability to control and monitor all configuration parameters and diagnostics from any 3rd party SNMP management application.

The Encoders/Decoders must support firmware updates from a central site. Updates must be downloadable to a single unit or by bulk via a single command from a firmware utility application via the Ethernet network. The firmware utility application must provide confirmation of the successful and unsuccessful updates. Upon completing of the update, the units must resume to original configuration without the need to reload the unit configuration.

Still Picture Capture

The codec shall be capable of capturing a still image in JPEG format and automatically transferring this image to an FTP site. The resolution of the image shall be user selectable with a default size of 704x480 pixels. The frequency of captures shall be user settable and shall as a minimum range from 1 picture every 30 seconds to 1 picture every five minutes.

Still picture logo placement capability. As a part of the still image capture, a graphic overlay image shall be added to the captured image. The graphic image shall be user selectable, in JPEG, BMP or GIF formats. The overlay shall also be user positional.

Special Submittal Requirements and Operational Demonstration

As a part of the product catalog cut submittal, the Contractor shall provide a demonstration of the codecs at the time of the initial product submittal. The manufacturer shall demonstrate the following interoperability with at least one other codec manufacturer. Compatibility shall also include successful transmission of PTZ commands. The demonstration shall be comprised of the following parts:

- **Codec CCTV camera PTZ compatibility.** The demonstration shall include a pair of the proposed codecs, a proposed CCTV camera, and a CCTV camera of another manufacturer other than the proposed CCTV which is of a manufacturer already installed in the State system.
- **Video interoperability.** The demonstration shall demonstrate the following interoperability: The proposed encoder shall be capable of encoding a video stream that is decodable by at least one other Manufacturer compiling with this specification, or of a manufacturer which equipment is presently in use by IDOT District 1 at the time of bidding. The interoperability demonstration shall be conducted in multicast mode.
- **Software video decoding.** A software based video decoder with PTZ control shall be provided for viewing and controlling a video stream remotely over the IP network.
- **Video snapshot capability.** A fully functional copy of the proposed video snapshot program shall be provided for the demonstration and throughout the 10 day period described herein.

After a successful demonstration of the above requirements, the codec pair shall remain with the Department for 10 working days for further observation. After 10 working days, the Contractor may pick up the codec pair. All costs for this demonstration shall be included in the cost of this pay item. It is the Contractor's responsibly to provide all hardware (including dome CCTV cameras and Ethernet switches) and software to perform the demonstrations as specified.

LCD Rack Monitor Assembly

In-rack video display clusters. The modular maintenance video display clusters shall have four 4-inch (diagonal measure), LCD displays with signal pass-through in a 2U rack-mount frame. Each display shall be 480 x 234 pixels and shall be NTSC compatible with individual color, tint, and brightness controls. The modular maintenance video display clusters shall be Marshall Electronics model V-R44P or approved equal. Three complete rack assemblies (12 monitors) shall be provided. A rack mounted power distribution switch shall be provided for the racks.

Fiber Optic Cable Termination

The Contractor shall include all necessary wires and cables necessary to interconnect the components of the CCTV cabinet. The Contractor shall provide a factory terminated patch block with a 12 fiber pigtail of sufficient length to connect to the lateral splice handhole without the use of any intermediate splices. The patch block shall be a Fiber Connections, Gator Patch II or approved equal.

Method Of Measurement. CCTV equipment shall be counted, each CCTV unit installed.

Basis Of Payment. This item shall be paid at the contract unit each for CLOSED CIRCUIT TELEVISION CAMERA EQUIPMENT.

BUDGETARY ALLOWANCE FOR CCTV INTEGRATION

Description: This item is to establish a budget account to allocate funds for the payment of the video integration. A budgetary allowance has been established since the final cost is unknown. This allowance will not be used to repair damage caused by the Contractor's operations. Damage caused by the Contractor's operations shall be repaired at no additional cost to the Contract.

The allowance under this Special Provision includes the coordination with camera equipment provided under this contract, adjacent contract(s), and coordination with existing CCTV equipment as indicated, including adjustments of or supplements to the equipment as may be required.

Video Control software: The existing control software is ICX's 360 Cameleon Enterprise camera control. Included in this item, the Contactor shall provide 10 Enterprise software license units. The Contractor shall configure the cameras within the video control software. This work shall be coordinated with the Electrical Maintenance Contractor.

Provisioning of IP routing and switching equipment: The Contractor shall fully integrate all the equipment to be installed with the existing video distribution system as a part of this item and this coordination will require technical services of the existing system integrator, AT&T, a Cisco Systems Integrator (Contact: Jim Patterson, AT&T, 217.801.2329) and coordination with the State District 1 Electrical Maintenance Contractor. This work shall be included in the item and will not be paid for separately.

This item shall be bid at a price of $10,000.00

Basis of Payment: This item shall be paid for at the contract lump sum price or fraction thereof for BUDGETARY ALLOWANCE FOR CCTV INTEGRATION, which shall include all work as described herein.

THERMAL MAGNETIC CIRCUIT BREAKER

Description. This work will consist of furnishing and installing a new thermal magnetic circuit breaker in an existing IDOT surveillance cabinet as described herein, as shown on the plans and as directed by the Engineer.
Construction Requirements. Furnishing and installing the thermal magnetic circuit breaker shall meet the requirements according to Division 800 of the Standard Specifications.

Materials. The thermal magnetic circuit breaker shall meet the requirements according to Section 1068.01(3) of the Standard Specifications.

Method of Measurement. Circuit breakers shall be counted as, each installed.

Basis of Payment. This item shall be paid at the contract unit price each for THERMAL MAGNETIC CIRCUIT BREAKER, of the type, voltage and amperage indicated.

CLEAN EXISTING MANHOLE OR HANDHOLE

Description. This item consists of cleaning an existing handhole or manhole for the installation of new conduit(s) and cable(s).

General Requirements. General requirements must be in accordance with Section 801 of the Standard Specifications, except as herein modified.

Installation. Existing cable hooks must be relocated and existing cables must be retrained as required prior to drilling the existing manhole or handhole. Existing and new debris must be removed and disposed of off-site by the Contractor. Existing and new gas and water must be pumped out as directed by IDOT. Debris removal, de-gassing and water pumping must be included in this item; separate payment will not be made.

The Contractor must furnish and install cable racks and/or cable hooks for new and existing cables in all manholes and handholes as required to facilitate new cable installation. This Work must be included in this item and separate payment will not be made.

Drilling the existing manhole or handhole will not be included in this item and will be paid for under a separate pay item.

Method of Measurement. Each manhole or handhole that is cleaned (relocating existing cable hooks, installing new cable hooks, retraining cables, removing debris, and pumping out gas and water) as indicated will be counted as a unit for payment. Each manhole or handhole that is drilled will be measured for payment for cleaning, and will be measured for cleaning only once.

Basis of Payment. This work will be paid for at the contract unit price each for CLEAN EXISTING MANHOLE OR HANDHOLE, which will be payment in full for performing the work described herein.

FIBER OPTIC CABLE, SINGLE MODE

Description. The Contractor shall furnish and install loose-tube, single-mode, fiber optic cable of the number of fibers specified as shown in the plans and as directed by the Engineer. Other ancillary components, required to complete the fiber optic cable plant, including but not limited to, moisture and water sealants, cable caps, fan-out kits, etc., shall be included in the cost of fiber optic cable and will not be paid for separately.

Materials. The single-mode, fiber optic cable shall incorporate a loose, buffer-tube design. The cable shall be an accepted product of the United States Department of Agriculture Rural Utilities Service (RUS) 7 CFR 1755.900 and meet the requirements of ANSI/ICEA Standard for Fiber Optic Outside Plant Communications Cable, ANSI/ICEA S-87-640-1999 for a single sheathed, non-armored cable, and shall be new, unused and of current design and manufacture.

Fibers

The cables shall use dispersion unshifted fibers. The optical and physical characteristics of the un-cabled fibers shall include:

The single-mode fiber shall meet EIA/TIA-492CAAA, "Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers," and ITU recommendation G.652.D, “Characteristics of a single-mode optical fiber cable.”

Physical Construction			
Requirement		**Units**	**Value**
Cladding Diameter		(µm)	125.0 ± 0.7
Core-to-Cladding Concentricity		(µm)	≤ 0.5
Cladding Non-Circularity			≤ 0.7 %
Mode Field Diameter	1310 nm	(µm)	9.2 ± 0.4
	1550 nm		10.4 ± 0.5
Coating Diameter		(µm)	245 ± 5
Colored Fiber Nominal Diameter		(µm)	253 - 259
Fiber Curl radius of curvature		(m)	> 4.0 m

Optical Characteristics				
Requirement			**Units**	**Value**
Cabled Fiber Attenuation		1310 nm	(dB/km)	≤ 0.4
		1550 nm		≤ 0.3
Point discontinuity		1310 nm	(dB)	≤ 0.1
		1550 nm		≤ 0.1
Macrobend Attenuation	Turns	Mandrel OD	(dB)	
	1	32 ± 2 mm		< 0.05 at 1550 nm
	100	50 ± 2 mm		< 0.05 at 1310 nm
	100	50 ± 2 mm		< 0.10 at 1550 nm
	100	60 ± 2 mm		< 0.05 at 1550 nm
	100	60 ± 2 mm		< 0.05 at 1625 nm
Cable Cutoff Wavelength (λ_{ccf})			(nm)	< 1260
Zero Dispersion Wavelength (λ_o)			(nm)	$1302 \le \lambda_o \le 1322$
Zero Dispersion Slope (S_o)			(ps/(nm²•km))	≤ 0.089
Total Dispersion		1550 nm	(ps/(nm•km))	≤ 3.5
		1285-1330 nm		≤ 17.5
		1625 nm		≤ 21.5
Cabled Polarization Mode Dispersion			(ps/km^{-2})	≤ 0.2
IEEE 802.3 GbE - 1300 nm Laser Distance			(m)	up to 5000
WaterPeak Attenuation: 1383 ± 3 nm			(dB/km)	≤ 0.4

Cable Construction

The number of fibers in each cable shall be as specified on the plans. Optical fibers shall be placed inside a loose buffer tube. The nominal outer diameter of the buffer tube shall be 3.0 mm. Each buffer tube shall contain up to 12 fibers. The fibers shall not adhere to the inside of the buffer tube.

Each fiber shall be distinguishable by means of color coding in accordance with TIA/EIA-598-B, "Optical Fiber Cable Color Coding." The fibers shall be colored with ultraviolet (UV) curable inks.

Buffer tubes containing fibers shall be color coded with distinct and recognizable colors in accordance with TIA/EIA-598-B, "Optical Fiber Cable Color Coding." Buffer tube colored stripes shall be inlaid in the tube by means of co-extrusion when required. The nominal stripe width shall be 1 mm.

For cables containing more than 12 buffer tubes, standard colors are used for tubes 1 through 12 and stripes are used to denote tubes 13 through 24. The color sequence applies to tubes containing fibers only, and shall begin with the first tube. If fillers are required, they shall be placed in the inner layer of the cable. The tube color sequence shall start from the inside layer and progress outward.

In buffer tubes containing multiple fibers, the colors shall be stable across the specified storage and operating temperature range and shall not be subject to fading or smearing onto each other. Colors shall not cause fibers to stick together.

The buffer tubes shall be resistant to external forces and shall meet the buffer tube cold bend and shrink back requirements of 7 CFR 1755.900.

Fillers may be included in the cable core to lend symmetry to the cable cross-section where needed. Fillers shall be placed so that they do not interrupt the consecutive positioning of the buffer tubes. In dual layer cables, any fillers shall be placed in the inner layer. Fillers shall be nominally 2.5 mm or 3.0 mm in outer diameter.

The central member shall consist of a dielectric, glass reinforced plastic (GRP) rod (optional steel central member). The purpose of the central member is to provide tensile strength and prevent buckling. The central member shall be overcoated with a thermoplastic when required to achieve dimensional sizing to accommodate buffer tubes/fillers.

Each buffer tube shall contain a water-swellable yarn for water-blocking protection. The water-swellable yarn shall be non-nutritive to fungus, electrically non-conductive, and homogeneous. It shall also be free from dirt or foreign matter. This yarn will preclude the need for other water-blocking material; the buffer-tube shall be gel-free. The optical fibers shall not require cleaning before placement into a splice tray or fan-out kit.

Buffer tubes shall be stranded around the dielectric central member using the reverse oscillation, or "S-Z", stranding process.

Water swellable yarn(s) shall be applied longitudinally along the central member during stranding.

Two polyester yarn binders shall be applied contrahelically with sufficient tension to secure each buffer tube layer to the dielectric central member without crushing the buffer tubes. The binders shall be non-hygroscopic, non-wicking, and dielectric with low shrinkage.

For single layer cables, a water swellable tape shall be applied longitudinally around the outside of the stranded tubes/fillers. The water swellable tape shall be non-nutritive to fungus, electrically non-conductive, and homogenous. It shall also be free from dirt and foreign matter.

For dual layer cables, a second (outer) layer of buffer tubes shall be stranded over the original core to form a two layer core. A water swellable tape shall be applied longitudinally over both the inner and outer layer. The water swellable tape shall be non-nutritive to fungus, electrically non-conductive, and homogenous. It shall also be free from dirt and foreign matter.

The cables shall contain one ripcord under the sheath for easy sheath removal.

Tensile strength shall be provided by the central member, and additional dielectric yarns as required.

The dielectric yarns shall be helically stranded evenly around the cable core.

The cables shall be sheathed with medium density polyethylene (MDPE). The minimum nominal jacket thickness shall be 1.4 mm. Jacketing material shall be applied directly over the tensile strength members (as required) and water swellable tape. The polyethylene shall contain carbon black to provide ultraviolet light protection and shall not promote the growth of fungus.

The MDPE jacket material shall be as defined by ASTM D1248, Type II, Class C, Category 4 and Grades J4, E7 and E8.

The jacket or sheath shall be free of holes, splits, and blisters.

The cable jacket shall contain no metal elements and shall be of a consistent thickness. Cable jackets shall be marked with the manufacturer's name, month and year of manufacture, sequential meter or foot markings, a telecommunication handset symbol as required by Section 350G of the National Electrical Safety Code (NESC), fiber count, and fiber type. The actual length of the cable shall be within -0/+1% of the length markings. The print color shall be white, with the exception that cable jackets containing one or more co-extruded white stripes, which shall be printed in light blue. The height of the marking shall be approximately 2.5 mm.

The maximum pulling tension shall be 2700 N (608 lbf) during installation (short term) and 890 N (200 lbf) long term installed. The shipping, storage, and operating temperature range of the cable shall be -40°C to +70°C. The installation temperature range of the cable shall be –30°C to +70°C.

General Cable Performance Specifications

The fiber optic cable manufacturer shall provide documentation and certify that the fiber optic cable complies with the following EIA-455-*xxx* Fiber Optic Test Procedures (FOTP):

> When tested in accordance with FOTP-3, "*Procedure to Measure Temperature Cycling Effects on Optical Fibers, Optical Cable, and Other Passive Fiber Optic Components*," the change in attenuation at extreme operational temperatures (-40°C and +70°C) shall not exceed 0.15 dB/km at 1550 nm for single-mode fiber and 0.3 dB/km at 1300 nm for multimode fiber.

When tested in accordance with FOTP-82, "*Fluid Penetration Test for Fluid-Blocked Fiber Optic Cable*," a one meter length of unaged cable shall withstand a one meter static head or equivalent continuous pressure of water for one hour without leakage through the open cable end.

When tested in accordance with FOTP-81, "*Compound Flow (Drip) Test for Filled Fiber Optic Cable*," the cable shall exhibit no flow (drip or leak) of filling and/or flooding material at 70°C.

When tested in accordance with FOTP-41, "*Compressive Loading Resistance of Fiber Optic Cables*," the cable shall withstand a minimum compressive load of 220 N/cm (125 lbf/in) applied uniformly over the length of the sample. The 220 N/cm (125 lbf/in) load shall be applied at a rate of 2.5 mm (0.1 in) per minute. The load shall be maintained for a period of 1 minute. The load shall then be decreased to 110 N/cm (63 lbf/in). Alternatively, it is acceptable to remove the 220 N/cm (125 lbf/in) load entirely and apply the 110 N/cm (63 lbf/in) load within five minutes at a rate of 2.5 mm (0.1 in) per minute. The 110 N/cm (63 lbf/in) load shall be maintained for a period of 10 minutes. Attenuation measurements shall be performed before release of the 110 N/cm (63 lbf/in) load. The change in attenuation shall not exceed 0.15 dB at 1550 nm for single-mode fibers and 0.30 dB at 1300 nm for multimode fiber.

When tested in accordance with FOTP-104, "*Fiber Optic Cable Cyclic Flexing Test*," the cable shall withstand 25 mechanical flexing cycles around a sheave diameter not greater than 20 times the cable diameter. The change in attenuation shall not exceed 0.15 dB at 1550 nm for single-mode fiber and 0.30 dB at 1300 nm for multimode fiber.

When tested in accordance with FOTP-25, "*Repeated Impact Testing of Fiber Optic Cables and Cable Assemblies*," except that the number of cycles shall be two at three locations along a one meter cable length and the impact energy shall be at least 4.4 Nm (in accordance with ICEA S-87-640)", the change in attenuation shall not exceed 0.15 dB at 1550 nm for single-mode fiber and 0.30 dB at 1300 nm for multimode fiber. When tested in accordance with FOTP-33, "*Fiber Optic Cable Tensile Loading and Bending Test*," using a maximum mandrel and sheave diameter of 560 mm, the cable shall withstand a rated tensile load of 2670N (601 lbf) and residual load of 30% of the rated installation load. The axial fiber strain shall be ≤ 60% of the fiber proof level after completion of 60 minute conditioning and while the cable is under the rated installation load. The axial fiber strain shall be ≤ 20% of the fiber proof level after completion of 10 minute conditioning and while the cable is under the residual load. The change in attenuation at residual load and after load removal shall not exceed 0.15 dB at 1550 nm for single mode fiber and 0.30 dB at 1300 nm for multimode fiber.

When tested in accordance with FOTP-85, "*Fiber Optic Cable Twist Test*," a length of cable no greater than 2 meters shall withstand 10 cycles of mechanical twisting. The change in attenuation shall not exceed 0.15 dB at 1550 nm for single-mode fiber and 0.30 dB at 1300 nm for multimode fiber.

When tested in accordance with FOTP-37, "*Low or High Temperature Bend Test for Fiber Optic Cable*," the cable shall withstand four full turns around a mandrel of ≤ 20 times the cable diameter after conditioning for four hours at test temperatures of -30°C and +60°C. Neither the inner or outer surfaces of the jacket shall exhibit visible cracks, splits, tears, or other openings. The change in attenuation shall not exceed 0.30 dB at 1550 nm for single mode fiber and 0.50 dB at 1300 nm for multimode fiber.

Quality Assurance Provision

All cabled optical fibers > 1000 meters in length shall be 100% attenuation tested. The attenuation of each fiber shall be provided with each cable reel. The cable manufacturer shall be TL 9000 registered.

Packaging

Top and bottom ends of the cable shall be available for testing. Both ends of the cable shall be sealed to prevent the ingress of moisture. Each reel shall have a weather resistant reel tag attached identifying the reel and cable. The reel tag shall include the following information:

- Cable Number
- Gross Weight
- Shipped Cable Length in Meters
- Job Order Number
- Product Number
- Customer Order Number
- Date Cable was Tested
- Manufacturer Order Number
- Cable Length Markings
    - a: Top (inside end of cable)
    - b: Bottom (outside end of cable)

The reel (one flange) marking shall include:

- Manufacturer
- Country of origin
- An arrow indicating proper direction of roll when handling
- Fork lift-handling illustration
- Handling Warnings.

Each cable shall be accompanied by a cable data sheet. The cable data sheet shall include the following information:

- Manufacturer Cable Number
- Manufacturer Product Number
- Manufacturer Factory Order Number
- Customer Name
- Customer Cable Number
- Customer Purchase Order Number
- Mark for Information
- Ordered Length
- Maximum Billable Length
- Actual Shipped Length
- Measured Attenuation of Each Fiber

The cable shall be capable of withstanding a minimum-bending radius of 20 times its outer diameter during installation and 10 times its outer diameter during operation without changing the characteristics of the optical fibers.

The cable shall meet all of specified requirements under the following conditions:

- Shipping/storage temperature: -58° F to +158° F (-50° C to +70° C)
- Installation temperature: -22° F to +158° F (-30° C to +70° C)
- Operating temperature: -40° F to +158° F (-40° C to +70° C)
- Relative humidity from 0% to 95%, non-condensing

Optical Patch Cords and Pigtails

The optical patch cords and pigtails shall comply with the following:

- The optical patch cords shall consist of a section of single fiber, jacketed cable equipped with optical connectors at both ends.

- The factory installed connector furnished as part of the optical patch cords and pigtails shall meet or exceed the requirements for approved connectors specified herein.

- The fiber portion of each patch cord and pigtail shall be a single, jacketed fiber with optical properties identical to the optical cable furnished under this contract.

- The twelve fiber single-mode fiber optic cable shall be installed as a pigtail with factory installed ST compatible connectors.

- The patch cords shall comply with Telcordia GR-326-CORE

Connectors

The optical connectors shall comply with the following:

- All connectors shall be factory installed ST compatible connectors. Field installed connectors shall not be allowed.

- Maximum attenuation 0.4dB, typical 0.2dB.

- No more than 0.2dB increase in attenuation after 1000 insertions.

- Attenuation of all connectors will be checked and recorded at the time of installation with an insertion test minimum 5 times checked with an OTDR.

- All fibers shall be connectorized at each end.

- All fibers shall terminate at a fiber patch panel

- Unused fibers will be protected with a plastic cap to eliminate dust and moisture.

- Termination shall be facilitated by splicing factory OEM pigtails on the end of the bare fiber utilizing the fusion splicing method. Pigtails shall be one meter in length.

CONSTRUCTION REQUIREMENTS

Experience Requirements

Personnel involved in the installation, splicing and testing of the fiber optic cables shall meet the following requirements:

- A minimum of three (3) years' experience in the installation of fiber optic cables, including fusion splicing, terminating and testing single mode fibers.

- Install two systems where fiber optic cables are outdoors in conduit and where the systems have been in continuous satisfactory operation for at least two years. The Contractor shall submit as proof, photographs or other supporting documents, and the names, addresses and telephone numbers of the operating personnel who can be contacted regarding the installed fiber optic systems.

- One fiber optic cable system (which may be one of the two in the preceding paragraph), which the Contractor can arrange for demonstration to the Department representatives and the Engineer.

Installers shall be familiar with the cable manufacturer's recommended procedures for installing the cable. This shall include knowledge of splicing procedures for the fusion splicer being used on this project and knowledge of all hardware such as breakout (furcation) kits and splice closures. The Contractor shall submit documented procedures to the Engineer for approval and to be used by Construction inspectors.

Personnel involved in testing shall have been trained by the manufacturer of the fiber optic cable test equipment to be used, in fiber optic cable testing procedures. Proof of this training shall be submitted to the Engineer for approval. In addition, the Contractor shall submit documentation of the testing procedures and a copy of the test equipment operation manual for approval by the Engineer.

Installation in Raceways

The Contractor shall provide a cable-pulling plan, identifying where the cable will enter the underground system and the direction of pull. This plan will address locations where the cable is pulled out of a handhole, coiled in a figure eight, and pulled back into the hand hole. The plan shall address the physical protection of the cable during installation and during periods of downtime. The cable-pulling plan shall be provided to the Engineer for approval a minimum of 15 working days prior to the start of installation. The Engineer's approval shall be for the operation on the freeway and does not include an endorsement of the proposed procedures. The Contractor is responsible for the technical adequacy of the proposed procedures.

During cable pulling operations, the Contractor shall ensure that the minimum bending of the cable is maintained during the unreeling and pulling operations. Entry guide chutes shall be used to guide the cable into the handhole conduit ports. Lubricating compound shall be used to minimize friction. Corner rollers (wheels), if used, shall not have radii less than the minimum installation-bending radius of the cable. A series array of smaller wheels can be used for accomplishing the bend if the cable manufacturers specifically approve the array.

The pulling tension shall be continuously measured and shall not be allowed to exceed the maximum tension specified by the manufacturer of the cable. Fuse links and breaks can be used to ensure that the cable tensile strength is not exceeded. The pulling system shall have an audible alarm that sounds whenever a pre-selected tension level is reached. Tension levels shall be recorded continuously and shall be given to the Engineer.

The cable shall be pulled into the conduit as a single component, absorbing the pulling force in all tension elements. The central strength member and Aramid yarn shall be attached directly to the pulling eye during cable pulling. "Basket grip" or "Chinese-finger type" attachments, which only attach to the cable's outer jacket, shall not be permitted. A breakaway swivel, rated at 95% of the cable manufacturer's approved maximum tensile loading, shall be used on all pulls. When simultaneously pulling fiber optic cable with other cables, separate grooved rollers shall be used for each cable.

To minimize the exposure of the backbone cable and to facilitate the longer lengths of fiber optic cable, the Contractor shall use a "blown cable" (pneumatically assisted) technique to place the fiber optic cable.

Where cable is to be pulled through existing conduit which contains existing cables, optical or other, the existing cables shall be removed and reinstalled with the fiber optic cable as indicated on the plans. The removal of the cable(s) shall be paid for separately. Reinstallation of the existing cables, if indicated on the plans, along with the fiber optic cable shall be included in this item for payment.

Tracer Wire

A tracer wire shall be installed with all fiber optic cable runs. One tracer wire shall be installed along with the fiber optic cable in each raceway. If a raceway has more than one fiber optic cable, only one tracer wire per raceway is required. If there are parallel raceways, a tracer wire is required in each raceway that contains a fiber optic cable. Tracer wire shall be installed in raceway segments which are metallic to provide a continuous tracer wire system.

The tracer wire shall be a direct burial rated, number 12 AWG (minimum) solid (.0808" diameter), steel core soft drawn high strength tracer wire. The wire shall have a minimum 380 pound average tensile break strength. The wire shall have a 30 mil high density yellow polyethylene (HDPE) jacket complying with ASTM-D-1248, and a 30 volt rating.

Connection devices used shall be as approved by the tracer wire manufacturer, except wire nuts of any type are not acceptable and shall not be used.

The cost of the tracer wire shall be included in the cost of the fiber optic cable and not paid for separately.

Aerial Fiber Optic Cable

Aerial fiber optic cable assemblies shall be of a self-supporting figure-8 design. The fiber optic cable shall be as described herein and shall be waterblocked utilizing water-swellable materials. The cable assembly shall be designed and manufactured to facilitate midspan access.

The fiber optic cable, 24 FO SM self-supporting cable is required at locations shown on the plans since the cable will be exposed to weather and capable of being relocated in the future during the Congress Parkway Bridge rehabilitation/reconstruction traffic staging. The submittal information must include a copy of the standard installation instructions for the proposed cable.

Fiber Optic Cable Attached to Steel Beam

The 24 aerial fiber optic cable, single mode aerial self-supporting cable attached to the steel beam (bottom flange), as shown on the plans, shall be secured/clamped to the beam with hardware that will not impede the optical characteristics of the cable.

The aerial fiber optic cable or fiber optic cable and power cable attached to the beam as shown on the plans will be secured to the steel beam with PVC coated clamps or approved device at 6'-0" intervals and a maximum of 2'-0" from any change in direction or prior to entering conduit.

Along steel beams no welding shall be allowed to secure the clamp to the steel beam. In addition along steel beams, should the clamping device require drilling holes in the steel beam/bottom flange, drill holes shall not extend through the full thickness of the steel beam, i.e. bottom flange.

The submittal information must include a copy of the standard installation instructions for the proposed cable attachment to steel beam. The cost of the attaching the cable to steel beam as shown on the plans shall be included in the cost of the 24 fiber optic, single mode, self-supporting cable.

Construction Documentation Requirements

Installation Practices for Outdoor Fiber Optic Cable Systems. The Contractor shall examine the proposed cable plant design. At least one month prior to starting installation of the fiber optic cable plant, the Contractor shall prepare and submit to the Engineer for review and approval, ten (10) copies of the Contractor's "Installation Practices for Outdoor Fiber Optic Cable Systems" manual. This manual shall address the Contractor's proposed practices covering all aspects of the fiber optic cable plant. This submittal shall include all proposed procedures, list of installation equipment, and splicing and test equipment. Test and quality control procedures shall be detailed as well as procedures for corrective action.

Operation and Maintenance Documentation

After the fiber optic cable plant has been installed, ten (10) complete sets of Operation and Maintenance Documentation shall be provided. The documentation shall, as a minimum, include the following:

- Complete and accurate as-built diagrams showing the entire fiber optic cable plant including locations of all splices.
- Final copies of all approved test procedures
- iComplete performance data of the cable plant showing the losses at each splice location and each terminal connector.
- oComplete parts list including names of vendors.

Testing Requirements

The Contractor shall submit detailed test procedures for approval by the Engineer. All fibers (terminated and unterminated) shall be tested bi-directionally at both 1310 nm and 1550 nm with both an Optical Time Domain Reflectometer (OTDR) and a power meter with an optical source.

For testing, intermediate breakout fibers may be concatenated and tested end-to-end. Any discrepancies between the measured results and these specifications will be resolved to the satisfaction of the Engineer.

Fibers which are not to be terminated shall be shall be tested with a temporary fusion spliced pigtail fiber. **Mechanical splice or bare fiber adapters are not acceptable**.

The Contractor shall provide the date, time and location of any tests required by this specification to the Engineer at least 5 days before performing the test. Upon completion of the cable installation, splicing, and termination, the Contractor shall test all fibers for continuity, events above 0.1 dB, and total attenuation of the cable. The test procedure shall be as follows:

A Certified Technician utilizing an Optical Time Domain Reflectometer (OTDR) and Optical Source/Power Meter shall conduct the installation test. The Technician is directed to conduct the test using the standard operating procedures defined by the manufacturer of the test equipment. All fibers installed shall be tested in both directions.

A fiber ring or fiber box shall be used to connect the OTDR to the fiber optic cable under test at both the launch and receive ends. The tests shall be conducted at 1310 and 1550 nm for all fibers.

All testing shall be witnessed by the IDOT Engineer and a copy of the test results (CD ROM or USB Drive) shall be submitted on the same day of the test. Hardcopies shall be submitted as described herein with copies on CD ROM.

At the completion of the test, the Contractor shall provide two copies of documentation of the test results to the Project Engineer. The test documentation shall be submitted as both a bound copy and a CDROM and shall include the following:

Cable & Fiber Identification:

- Cable ID
- Cable Location - beginning and end point
- Fiber ID, including tube and fiber color
- Wavelength
- Pulse width (OTDR)
- Refractory index (OTDR)
- Operator Name
- Date & Time
- Setup Parameters
- Range (OTDR)
- Scale (OTDR)
- Setup Option chosen to pass OTDR "dead zone"

Test Results shall include:

- OTDR Test results
- Total Fiber Trace
- Splice Loss/Gain
- Events > 0.10 dB
- Measured Length (Cable Marking)
- Total Length (OTDR)
- Optical Source/Power Meter Total Attenuation (dB/km)

Sample Power Meter Tabulation:

Power Meter Measurements (dB)									
Location		Fiber No.	Cable Length (km)	A to B		B to A		Bidirectional Average	
A	B			1310 nm	1550 nm	1310 nm	1550 nm	1310 nm	1550 nm
		1							
		2							
Maximum Loss									
Minimum Loss									

The OTDR test results file format must be Bellcore/Telcordia compliant according to GR-196-CORE Issue 2, OTDR Data Standard, GR 196, Revision 1.0, GR 196, Revision 1.1, GR 196, Revision 2.0 (SR-4731) in a ".SOR" file format. A copy of the test equipment manufacture's software to read the test files, OTDR and power, shall be provided to the Department. These results shall also be provided in tabular form, see sample below:

Sample OTDR Summary				
Cable Designation:	*TCF-IK-03*	**OTDR Location:**	*Pump Sta. 67*	**Date:** *1/1/00*
Fiber Number	**Event Type**	**Event Location**	**Event Loss (dB)**	
			1310 nm	**1550 nm**
1	*Splice*	*23500 Ft.*	*.082*	*.078*
1	*Splice*	*29000 Ft.*	*.075*	*.063*
2	*Splice*	*29000 Ft.*	*.091*	*.082*
3	*Splice*	*26000 Ft.*	*.072*	*.061*
3	*Bend*	*27000 Ft.*	*.010*	*.009*

The following shall be the criteria for the acceptance of the cable:

The test results shall show that the dB/km loss does not exceed +3% of the factory test or 1% of the cable's published production loss. However, no event shall exceed 0.10 dB. If any event is detected above 0.10 dB, the Contractor shall replace or repair the fiber including that event point.

The total loss of the cable (dB), less events, shall not exceed the manufacturer's production specifications as follows: 0.5 dB/km at both 1310 and 1550 nm.

If the total loss exceeds these specifications, the Contractor shall replace or repair that cable run at the no additional cost to the state, both labor and materials. Elevated attenuation due to exceeding the pulling tension during installation shall require the replacement of the cable run at no additional cost to the State, including labor and materials.

Splicing Requirements

Splices shall be made at locations shown on the Plans. Any other splices shall be permitted only with the approval of the Engineer. Splices will be paid for separately. All splice locations must be identified in the Record Drawings. **Cable runs which dead-end at a handhole, communications vault, interconnect cabinet, or any other type of enclosure, shall be dead ended in a splice enclosure.**

Slack Storage of Fiber Optic Cables

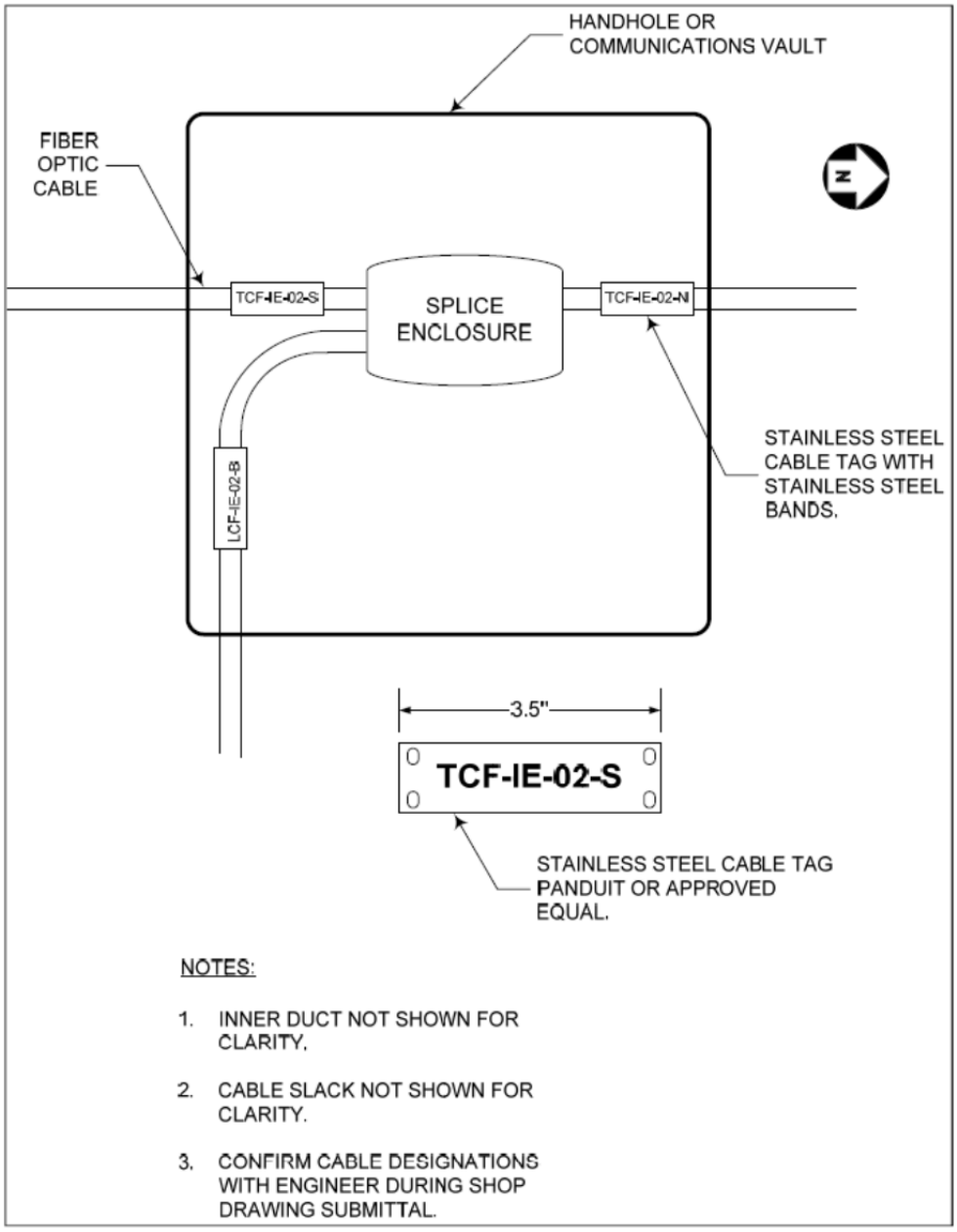
Included as a part of this item, slack fiber shall be supplied as necessary to allow splicing the fiber optic cables in a controlled environment, such as a splicing van or tent. After splicing has been completed, the slack fiber shall be stored underground in handholes or in the raised base adapters of ground mounted cabinets in accordance with the fiber optic cable manufacturer's guidelines. Fiber optic cable slack shall be 100 feet for each cable at each splice location, above or below ground. Fiber optic cable slack shall be 50 feet for each cable at access points, above or below ground, where splicing is not involved. This slack shall be measured for payment.

A fiber optic cable support assembly shall be recommended and approved by the Engineer at fiber optic cable slack locations as required herein and shown on the plans. Each support assembly shall consist of multiple brackets, racks, and/or rails required to suspend the required surplus cabling and any splice enclosures required. The support assembly shall be made from or coated with weather resistant material such that there is no corrosion of the supports. The support assemblies shall be anchored using stainless steel hardware.

The fiber optic cable support assemblies shall be provided where slack cable is required as stipulated herein and included in the contract unit price for fiber optic cable.

Fiber optic cable shall be tagged inside handholes with yellow tape containing the text:

"CAUTION - FIBER OPTIC CABLE." In addition, permanent tags, as approved by the engineer, shall be attached to all cable in a hand hole or other break-out environment. These tags shall be stainless steel, nominally 0.75" by 1.72", and permanently embossed. These tags shall be attached with stainless steel straps, and shall identify the cable number, the number of fibers, and the specific fiber count. Tags and straps shall be Panduit or approved equal. See figure below:



Label the destination of each trunk cable onto the cable in each handhole, vault or cable termination panel.

Method of Measurement. Fiber optic cable will be measured for payment in feet in place installed and tested. Fiber optic cable will be measured horizontally and vertically between the changes in direction, including slack cable. The entire lengths of cables installed in buildings will be measured for payment

Basis of Payment. This work will be paid for at the contract unit price per foot for FIBER OPTIC CABLE of the type, size, and number of fibers specified. Payment shall not be made until the cable is installed, spliced and tested in compliance with these special provisions.

FIBER OPTIC SPLICE
Effective: April 1, 2005

Description

The Contractor will splice optical fibers from different cable sheaths and protect them with a splice closure at the locations shown on the Plans. Fiber splicing consists of in-line fusion splices for all fibers described in the cable plan at the particular location. Two splices are identified. A mainline splice includes all fibers in the cable sheath. In a lateral splice, the buffer tubes in the mainline cable are dressed out and those fibers identified on the plans are accessed in and spliced to lateral cables.

Materials

Splice Closures. Splice Closures shall be designed for use under the most severe conditions such as moisture, vibration, impact, cable stress and flex temperature extremes as demonstrated by successfully passing the factory test procedures and minimum specifications listed below:

Physical Requirements. The closures shall provide ingress for up to four cables in a butt configuration. The closure shall prevent the intrusion of water without the use of encapsulates. The closure shall be capable of accommodating splice organizer trays that accept mechanical, or fusion splices. The splice closure shall have provisions for storing fiber splices in an orderly manner, mountings for splice organizer assemblies, and space for excess or un-spliced fiber.

Splice organizers shall be re-enterable. The splice case shall be UL rated.

Closure re-entry and subsequent reassembly shall not require specialized tools or equipment.

Further, these operations shall not require the use of additional parts. The splice closure shall have provisions for controlling the bend radius of individual fibers to a minimum of 38 mm (1.5 in.).

Factory Testing

Compression Test. The closure shall not deform more than 10% in its largest cross-sectional dimension when subjected to a uniformly distributed load of 1335 N at temperatures of –18 and 38 degrees Celsius (0 and 100 degrees Fahrenheit). The test shall be performed after stabilizing at the required temperature for a minimum of two hours. It shall consist of placing an assembled closure between two flat parallel surfaces, with the longest closure dimension parallel to the surfaces. The weight shall be placed on the upper surface for a minimum of 15 minutes. The measurement shall then be taken with weight in place.

Impact Test. The assembled closure shall be capable of withstanding an impact of 28 N-M at temperatures of –18 and 38 degrees Celsius (0 and 100 degrees Fahrenheit). The test shall be performed after stabilizing the closure at the required temperature for a minimum of 2 hours.

The test fixture shall consist of 9 kg (20 lb) cylindrical steel impacting head with a 50 mm (2 in.) spherical radius at the point where it contacts the closure. It shall be dropped from a height of 305 mm (12 in.). The closure shall not exhibit any cracks or fractures to the housing that would preclude it from passing the water immersion test. There shall be no permanent deformation to the original diameter or characteristic vertical dimension by more than 5%.

Cable Gripping and Sealing Testing. The cable gripping and sealing hardware shall not cause an increase in fiber attenuation in excess of 0.05 dB/fiber @ 1550 nm when attached to the cables and the closure assembly. The test shall consist of measurements from six fibers, one from each buffer tube or channel, or randomly selected in the case of a single fiber bundle. The measurements shall be taken from the test fibers before and after assembly to determine the effects of the cable gripping and sealing hardware on the optical transmission of the fibers.

Vibration Test. The splice organizers shall securely hold the fiber splices and store the excess fiber. The fiber splice organizers and splice retaining hardware shall be tested per EIA Standard FOTP-II, Test Condition 1. The individual fibers shall not show an increase in attenuation in excess of 0.1 dB/fiber.

Water Immersion Test. The closure shall be capable of preventing a 3 m (10 ft) water head from intruding into the splice compartment for a period of 7 days. Testing of the splice closure is to be accomplished by the placing of the closure into a pressure vessel and filling the vessel with tap water to cover the closure. Apply continuous pressure to the vessel to maintain a hydrostatic head equivalent 3 m (10 ft) on the closure and cable. This process shall be continued for 30 days. Remove the closure and open to check for the presence of water. Any intrusion of water in the compartment containing the splices constitutes a failure.

Certification. It is the responsibility of the Contractor to insure that either the manufacturer, or an independent testing laboratory has performed all of the above tests, and the appropriate documentation has been submitted to the Department. Manufacturer certification is required for the model(s) of closure supplied. It is not necessary to subject each supplied closure to the actual tests described herein.

Construction Requirements

The closure shall be installed according to the manufacturer's recommended guidelines. For mainline splices, the cables shall be fusion spliced. 45 days prior to start of the fiber optic cabling installation, the Contractor shall submit the proposed locations of the mainline splice points for review by the Department.

The Contractor shall prepare the cables and fibers in accordance with the closure and cable manufacturers' installation practices. A copy of these practices shall be provided to the Engineer 21 days prior to splicing operations.
Using a fusion splicer, the Contractor shall optimize the alignment of the fibers and fuse them together. The Contractor shall recoat the fused fibers and install mechanical protection over them.

Upon completing all splicing operations for a cable span, the Contractor shall measure the mean bi-directional loss at each splice using an Optical Time Domain Reflectometer. This loss shall not exceed 0.1 dB.

The Contractor shall measure the end-to-end attenuation of each fiber, from connector to connector, using an optical power meter and source. This loss shall be measured at from both directions and shall not exceed 0.5 dB per installed kilometer of single mode cable. Measurements shall be made at both 1300 and 1550 nm for single mode cable. For multimode cable, power meter measurements shall be made at 850 and 1300 nm. The end-to-end attenuation shall not exceed 3.8 dB/installed kilometers at 850nm or 1.8 dB per installed kilometer at 1300nm for multimode fibers.

As directed by the Engineer, the Contractor at no additional cost to the Department shall replace any cable splice not satisfying the required objectives.

The Contractor shall secure the Splice Closure to the side of the splice facility using cable support brackets. All cables shall be properly dressed and secured to rails or racks within the manhole. No cables or enclosures will be permitted to lie on the floor of the splice facility.

Cables that are spliced inside a building will be secured to the equipment racks or walls as appropriate and indicated on the Plans.

Method of Measurement

Fiber optic splice of the type specified will be measured as each, completely installed and tested with all necessary splices completed within the enclosure, and the enclosure secured to the wall of the splice facility.

Basis of Payment

This item shall be paid at the contract unit price each for FIBER OPTIC SPLICE, LATERAL or FIBER OPTIC SPLICE, MAINLINE of the type specified, which shall be payment in full for the work, complete, as specified herein.

FIBER OPTIC PATCH PANEL, 96F

Description. This item shall consist of furnishing and installing a fiber optic patch panel for a 96 fiber optic cable, as specified in the plans and described herein.

Materials. The Fiber Optic Patch Panel Rackmount shall be equal to Siecor Model CPH-096.

The bulkheads or single mode adapter types shall be single mode ST compatible, ceramic. The Contractor shall supply enough splice trays to accommodate 96 single mode splices. The splice trays shall accommodate 12 fusion splices and be equal to Siecor Model M67-041-C. Splice trays shall mount in the 19" rack and be housed in their own housing separate from the bulk heads.

Installation Details:

The Fiber Optic Patch Panels shall be installed in a Traffic Systems Center or Fiber Termination Cabinet as specified in the plans. Patch Panels shall come with cable strain relief hardware and pull out label for administrative documentation. Pigtails shall be fusion spliced to the fiber optic cable and terminated in the fiber patch panel. All work shall be neat and in a workmanlike manner. Particular care shall be taken as to not crush or kink the cable. If in the opinion of the TSC Engineer the cable has been crushed or kinked, the entire cable span shall be removed and replaced at the Contractor's expense.

The Contractor shall follow all accepted good industry practices while installing and terminating the fiber optic cable.

The Contractor shall supply each fiber optic patch panel with 12 single fiber cable, single mode patch cords with optical connectors at each end. The TSC Engineer shall supply the Contractor with cable lengths, and connector types to be used with the patch cord assemblies.

Basis of Payment. This work shall be paid for at the contract unit price each for Fiber Optic Patch Panel, 96F which price shall include furnishing and installing the fiber optic patch panel, patch cords and any other materials, hardware, and labor necessary to complete the installation.

JUNCTION BOX

Description. This work will consist of furnishing and installing a stainless steel, Type "J" junction box with cover embedded in concrete as described herein, as shown on the plans and as directed by the Engineer.

Construction Requirements. Furnishing and installing the junction box shall meet the requirements according to Section 813 of the Standard Specifications, unless modified in this special provision.

Materials. The junction box shall meet the requirements according to Section 1088.04 of the Standard Specifications, unless modified in this special provision.

The junction box shall be continuously welded and consist of ¼" thick, Type 316 stainless steel with a stainless steel ¼" Type 316 cover, neoprene gasket and a minimum of ten 3/8" X ¾" 16 threads/inch flat-head stainless steel slotted screws.

Reference Traffic Surveillance Typical Drawings TY-1TSC-663 #2 through #13 drawings. .

Installation. All junction boxes shall be water tight. Predrilled holes shall be provided for the applicable conduit size and location. Unless otherwise specified, conduits terminating at stainless steel boxes shall be terminated in conduit hubs.

The cover shall be recessed within an outside frame, having a water-tight gasket mounted flush with the surface of this frame. Recessed stainless steel slot head screws shall secure the cover.

Each box shall have two 2.625 inch diameter holes for installing 2" diameter conduits on both sides of the box. For locations where conduits also exit through the bottom of the box, two additional 2.625 inch diameter holes shall be provided in the bottom of the box for installing the 2" diameter conduits. For locations where a junction box is to intercept an existing 4" surveillance conduit, a 4.625" shall be provided on the appropriate side of the box.

Method of Measurement. Junction boxes shall be counted as, each installed.

Basis of Payment. This item shall be paid at the contract unit price each for JUNCTION BOX, of the type and dimensions indicated, which price shall be payment in full for all labor and materials necessary to complete the work as described above.

STEP-DOWN TRANSFORMER INSTALLATION IN SURVEILLANCE CABINET

DESCRIPTION

This item shall consist of furnishing and installing a step-down voltage transformer in a Surveillance cabinet, as shown on plans, to furnish 115 V.A.C. service for the surveillance control equipment. The source shall be a lighting cabinet, as shown in the plans.

The functional requirements for the transformer are as follows:

A. The line voltage to the transformer will be 480 V.A.C. 60 cycle, AC Source from the Main Distribution Panel.

B. The transformer shall reduce the voltage to 120/240 V.A.C., 60 cycle, which is the voltage required to operate surveillance equipment.

C. The transformer shall be required to have a minimum rating of 1 KVA

D. The transformer shall be enclosed in a NEMA 3R Encapsulated enclosure. The transformer shall be corrosion-proof.

INSTALLATION

a. The transformer shall be permanently mounted within the Surveillance cabinet. The Contractor shall notify the State Electrical Maintenance Engineer for lighting systems for access and location for the 480 V.A.C. source within the Main Distribution Panel.

b. At the Surveillance cabinet, the line side of the transformer shall have a 15 amp breaker and the load shall be connected to the existing 30amp breaker.

BASIS OF PAYMENT

This item will be paid for at the contract unit price, each, for STEP-DOWN TRANSFORMER, all equipment, breakers and systems operating and completely in place. Cable harness, wire, lug ends, mounting brackets and miscellaneous hardware shall be included in this pay item.

LIGHTNING PROTECTION FOR INDUCTION LOOP DETECTORS (TSC T426 #13)
Effective: February 6, 2013

DESCRIPTION

The Contractor shall furnish and install stud-mounted lightning protection devices on each induction loop terminated inside the cabinet at locations shown on plans and as directed by Engineer.

MATERIALS

The lightning protection device shall be a three-terminal device, two of which are connected across the loop input of the detector for differential mod protection and the third terminal grounded to protect against common mode damage. Differential mode surge shall be clamped by the semi-conductor array instantly and common mode surges shall be handled by three element gas discharge tube which fires at 400 VDC and thereafter clamps the two loop leads to 30 Volts in respect to ground. The lightning protection device shall be mounted in the cabinet in close proximity to the loop input. Extension of the factory leads off the lightning protection device to extend them to the loop input will not be allowed. Miscellaneous hardware and mounting will not be paid for separately but shall be included in the cos of this item

METHOD OF MEASUREMENT

This item shall be measured for payment as each completely installed and tested.

BASIS OF PAYMENT

This work shall be paid for at the contract unit price each for LIGHTNING PROTECTION FOR INDUCTION LOOP DETECTOR, which price shall be payment in full for all work as described herein and as directed by the Engineer.

WATER MAIN REMOVAL

Description. This work will consist of the removal of water main of various sizes, including 8", 12" and 36" diameters and all bends, fittings and all other appurtenances identified to be removed on the Plans. Water main shall be removed according to Article 561 of the "Standard Specifications" and in conformance with the methods identified in Article 551.03 of the "Standard Specifications"

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service.
Any water main dewatering required during the removal of water main pipe shall be considered included as part of the successful removal of the water main.

Method of Measurement. This work shall be measured for payment according to Article 561.04 of the "Standard Specifications".

Any reducer pipe sections will be measured as the pipe size of the larger opening.

Excavation in rock will be measured for payment according to Article 502.12.

Trench backfill for water main removal will be measured for payment according to Article 208.03, except an addition will be made for one-half of the volume of the pipe removed.

Basis of Payment. This work will be paid for at the contract unit price per foot for WATER MAIN REMOVAL at the diameter specified, which price will be payment in full for all labor, equipment and materials necessary to complete the work as described and includes all excavation, backfill and proper disposal of pipe and fittings to be removed.

TRENCH BACKFILL will be paid for separately.

Excavation in rock will be paid for according to Article 502.13.

Trench backfill will be paid for according to Article 208.04.

Removal and replacement of unsuitable material below plan bedding grade will be paid for according to Article 109.04.

ABANDON EXISTING WATER MAIN, FILL WITH CLSM

Description. This work will consist of the abandonment of existing water main with a diameter of 16" or greater and all bends, fittings and all other appurtenances identified to be abandoned on the Plans.

Existing water main that has been determined to not be affected by proposed improvements may remain abandoned in place. The abandonment shall be in accordance with Chicago Department of Water Management (CDWM) Technical Specifications for Water Main Construction included by Appendix. In accordance with Paragraph 3.13 of Section 33 11 13, all pipe 16 inch in diameter and larger shall be filled with CLSM. All pipes to be abandoned under this item shall have all openings sealed with a one (1) foot minimum length concrete plug.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service. Any water main dewatering required during the removal of water main pipe shall be considered included as part of the successful removal of the water main.

Method of Measurement. This work will be measured for payment in place in feet. The length will include all concrete plugs placed and CLSM placed within pipes to remain.

Basis of Payment. This work will be paid for at the contract unit price per foot for ABANDON EXISTING WATER MAIN, FILL WITH CLSM, which price will be payment in full for all labor, equipment and materials necessary to complete the work as described and includes all excavation and backfill as necessary. No separate payment will be made for concrete plugs installed to seal the pipes to be abandoned under this item.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04

WATER MAIN TO BE ABANDONED, 8"

Description. This work will consist of the abandonment of existing 8” diameter water main as identified to be abandoned on the Plans.

Existing water main that has been determined to not be affected by proposed improvements may remain abandoned in place. The abandonment shall be in accordance with Chicago Department of Water Management (CDWM) Technical Specifications for Water Main Construction included by Appendix. Water mains shall be abandoned in accordance with Paragraph 3.13 of Section 33 11 13 and shall have all openings sealed with a one (1) foot minimum length concrete plug.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service. Any water main dewatering required during the removal of water main pipe shall be considered included as part of the successful removal of the water main.

Method of Measurement. This work will be measured for payment in place in feet for the 8” water main to be abandoned. No separate measurement of concrete plugs installed within 8” diameter water main will be made.

Basis of Payment. This work will be paid for at the contract unit price per foot for WATER MAIN TO BE ABANDONED, 8” which price will be payment in full for all labor, equipment and materials necessary to complete the work as described and includes all excavation and backfill as necessary.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04

PLUG WATER MAIN, 8”

Description. This work will consist of the installation of a new mechanical joint ductile iron plug in an existing water main or fitting and all bracing and restraint required for the water main to remain in service after water service is reinstated. The removal of any associated pipe is included within separate items.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service. Any water main dewatering required during the removal of water main pipe shall be considered included as part of the successful removal of the water main.

Method of Measurement. This work will be measured for payment in place for each mechanical joint ductile iron plug installed within 8" diameter water main or fitting.

Basis of Payment. This work will be paid for at the contract unit price per each for PLUG EXISTING WATER MAIN, 8" which price will be payment in full for all labor, equipment and materials necessary to complete the work as described. All other work will be paid for under WATER MAIN REMOVAL item.

REMOVE EXISTING VALVE AND VAULT

Description. Work under this item will include the complete removal of existing City of Chicago Water Main valves and vault structures as part of the work shown on the Plans. After the removal of the cast iron frame and lid and the removal of all pipe, valves, fittings, taps and other water main elements, the brick or concrete structure must be broken down with the void in the affected area filled to grade as shown in the Plans and described in these special provisions.

The work to remove existing valve and vaults shall conform to Article 605.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service.

Construction Requirements. No work shall proceed prior to the shutdown of any water main passing through or adjacent to the vault structure to be removed. This work will consist of removing the frame and cover of an existing vault structure, removal of valves, fittings, taps and other elements of the water system within the vault, breaking down the structure walls, removing large debris, and backfilling the hole as required. If the vault is in a parkway, the hole must be filled level to the existing grade. The top six inches of fill must be of an approved soil mixture. If the vault is in sidewalk or in pavement, the sidewalk or pavement will be included in other pay items. Trench backfill must be utilized to fill the void if pavement is proposed. If proposed structures, including water main vaults or sewer structures, or water main or sewer pipe are planned for the same location as the structure to be removed, the Contractor may elect to utilize the void from the vault removal as excavation for proposed work. In this case, no backfill is necessary and any backfill for the proposed work will be considered part of those proposed items. Any frames, lids, valves, fittings, taps or other water main elements that are salvaged in reasonable condition in the opinion of the Engineer may be offered to the City of Chicago Department of Water Management. Any debris, including the frame, lid, valves, fittings, taps or other items must be disposed of off-site in an approved manner. The Contractor will pay for all disposal fees.

Method of Measurement. This work will be paid for per each vault removed including all existing water main pipe, valves, fittings, taps or other water main items. All backfill will be considered as part of the vault removal unless otherwise included within items that are placed within the area of the removed structure.

Basis of Payment. This work will be paid for at the contract unit price per each for REMOVE EXISTING VALVE AND VAULT which price will be payment in full for all labor, equipment and materials necessary to complete the work as described. Salvaging of any materials will be considered incidental to this item.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04.

FILLING VALVE VAULTS

Description. Work under this item will include the abandonment of existing Water Main vault structures as part of the removal of an existing fire hydrant and abandonment of a portion of 8” water main. Any existing structure along water main pipe to be abandoned or removed that does not conflict with proposed utility, sewer, bridge or roadway items may be abandoned per this specification. After the optional removal of all pipe, valves, fittings, taps and other water main elements, the brick or concrete structure must filled in conformance with Section 605 of the IDOT Standard Specifications for Road and Bridge Construction and City of Chicago Department of Water Management Standards.

Filling. No work shall proceed prior to the shutdown of any water main passing through or adjacent to the vault structure to be removed. This work will consist of removing the frame and cover of an existing vault structure, removal of valves, fittings, taps and other elements of the water system, partial removal of the structure to a minimum depth of 36 inches below proposed grade and filling the structure with either sand or controlled low strength material (CLSM). The Contractor may elect to avoid salvaging any elements of the vault structure. If this occurs, the existing elements of the structure must be removed to a minimum depth of 36 inches below proposed grade and then filled in as described. Sand must be compacted. CLSM must meet the requirements of Section 593 of the IDOT Standard Specifications for Road and Bridge Construction.

Any frames, lids, valves, fittings, taps or other water main elements that are salvaged in reasonable condition in the opinion of the Engineer may be offered to the City of Chicago Department of Water Management. Any debris, including the frame, lid, valves, fittings, taps or other items must be disposed of off-site in an approved manner. The Contractor will pay for all disposal fees.

Method of Measurement. This work will be paid for per each vault filled using methods as described. No separate measurement for materials used for the purposes of filling structures will be made.

Basis of Payment. This work will be paid for at the contract unit price per each for FILLING VALVE VAULTS which price will be payment in full for all labor and materials necessary to complete the work as described. Salvaging of any materials will be considered incidental to this item.

CONCRETE REMOVAL (SPECIAL)

Description. This work will consist of furnishing all labor, equipment and materials for the removal of unreinforced concrete, reinforced concrete, masonry materials and other items utilized as thrust blocks for water main pipe that is to be removed. The work shall be done in accordance with the applicable portions of Section 501 of the Standard Specifications.

The water main that is to be removed is assumed to utilize thrust blocks, saddles, collars and other objects made of unreinforced and reinforced concrete, masonry materials and other similar items. Additional locations requiring concrete removal may be encountered and will be paid for as CONCRETE REMOVAL (SPECIAL). The Engineer shall determine if removal is required based upon the proposed structure or utility improvements. The removal required may only need to be partial due to minor conflict with the proposed improvement. Sheet piling, shoring and other forms utilized during the original installation of water main thrust blocks must also be removed and will not be measured or paid for separately.

The thrust block, saddle, collar or other item to be removed may be located adjacent to utility or sewer structures, pipes, ducts and other elements. The thrust block, saddle, collar or other item may be located deep within the ground. In all cases, the Contractor shall provide all necessary shoring and bracing in order to remove the structure.

All concrete, reinforcing steel, piling, masonry or other materials removed under this Item shall become the property of the Contractor and shall be disposed of by the Contractor off the site and in a lawful manner meeting all IDOT Policies and Procedures.

Method of Measurement. The existing thrust blocks, saddles, collars or other elements adjacent to or attached to water main for removal shall be measured in place. All work to be paid for as CONCRETE REMOVAL (SPECIAL) shall be agreed upon with the Engineer and be measured in place prior to the start of removal by the Contractor. The Contractor can be authorized to begin CONCRETE REMOVAL (SPECIAL) by the Engineer and the final measurements may take place after the removal of the thrust block, saddle, collar or other item at the location of removal prior to disposal.

Trench backfill utilized as backfill for the areas vacated by the concrete that was removed will be measured for payment according to Article 208.03.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard for CONCRETE REMOVAL (SPECIAL) at the volume measured.

TRENCH BACKFILL will be paid for according to Article 208.04.

Removal and replacement of unsuitable material below plan bedding grade will be paid for according to Article 109.04.

FIRE HYDRANTS TO BE REMOVED

Description. Work under this item will include the removal of existing City of Chicago Fire Hydrants as part of the complete removal of water main pipe leading to the fire hydrant to be removed.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service.

Demolition. No work shall proceed prior to the shutdown of any water main leading to or adjacent to the fire hydrant to be removed. The shutdown of the water main leading to the fire hydrant is at the discretion of the City of Chicago Department of Water Management. This work will consist of the removal of the City of Chicago fire hydrant in conformance with Section 564 of the IDOT Standard Specifications for Road and Bridge Construction and City of Chicago Department of Water Management Standards.

The fire hydrant must be removed using methods that minimize damage to the hydrant, pipe, valves, fittings and other elements. After removal, the hydrant must be provided to the City of Chicago Department of Water Management (CDWM). If the hydrant is rejected by CDWM due to condition, the hydrant must be disposed of off-site in an approved manner. The Contractor will pay for all disposal fees.

Any water main dewatering required during the removal of the fire hydrants shall be considered included as part of the successful removal of the fire hydrants.

Method of Measurement. This work will be paid for per each fire hydrant removed as described.

Basis of Payment. This work will be paid for at the contract unit price per each for FIRE HYDRANTS TO BE REMOVED which price will be payment in full for all labor and materials necessary to complete the work as described. Salvaging of any materials will be considered incidental to this item.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04

DUCTILE IRON WATER MAIN, MECHANICAL JOINT 8”
DUCTILE IRON WATER MAIN, MECHANICAL JOINT 12”
DUCTILE IRON WATER MAIN, MECHANICAL JOINT 36”

Description. This work will consist of the installation of water main at the size specified, including all bends, fittings and all other appurtenances.

Water main shall be installed according to Article 561 of the “Standard Specifications” and in conformance with City of Chicago Department of Water Management Standards and Technical Specifications.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service prior to the start-up date established in coordination with the CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM.

Construction Requirements. The furnishing and installation of ductile iron water main, steel casings, fittings, and other appurtenances for the installation of water main shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Ductile Iron Pipe and Fittings	Section 33 11 13
Hydrostatic Testing and Disinfecting Water Mains	Section 33 13 00

All required work to connect to and transition from existing water main is included under this item.

All required work and any temporary fittings, pipe, valves, hydrants and appurtenances required for flushing, testing and disinfecting water mains is included under this item.

Testing and disinfecting as required by the City of Chicago Department of Water Management is included under this item.

Any temporary support or bracing of existing utilities must be coordinated with the affected utilities.

Any water main dewatering required during the installation of water main pipe shall be considered included as part of the successful installation of the water main.

Method of Measurement. This work shall be measured for payment according to Article 561.04 of the "Standard Specifications".

Excavation in rock will be measured for payment according to Article 502.12.

Trench backfill shall be constructed in accordance with Articles 208.01 and 208.02.

Basis of Payment. This work will be paid for at the contract unit price per foot for DUCTILE IRON WATER MAIN, MECHANICAL JOINT 8", DUCTILE IRON WATER MAIN, MECHANICAL JOINT 12" and DUCTILE IRON WATER MAIN, MECHANICAL JOINT 36" and includes all required transitions between existing and proposed water main.

TRENCH BACKFILL will be paid for separately.

Excavation in rock will be paid for according to Article 502.13.

Trench backfill will be paid for according to Article 208.04.

Removal and replacement of unsuitable material below plan bedding grade will be paid for according to Article 109.04.

WATER VALVES 8"
WATER VALVES 12"

Description. The work under this item consists of installing a new gate valve and valve basin at the size specified for the relocation of water mains. The work shall be performed as detailed on the Plans, specified herein and directed by the IDOT Resident Engineer and the Chicago Department of Water Management Commissioner or his representative (Engineer).

Water main structures shall be installed according to Article 602 of the "Standard Specifications" and in conformance with City of Chicago Department of Water Management Standards and Technical Specifications.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service prior to the start-up date established in coordination with the CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM.

Construction Requirements. The furnishing and installation of a gate valve and valve basin for the relocation of water mains shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Water Main Control Valves	Section 33 12 16
Water Main Valve Basins & Meter Vaults	Section 33 12 20
Hydrostatic Testing and Disinfecting Water Mains	Section 33 13 00

Testing and disinfecting as required by the City of Chicago Department of Water Management is included under this item.

Any water main dewatering required during this work shall be considered included as part of the successful installation of the 8" gate valve.

Method of Measurement. This work will be paid for per each gate valve and valve basin installed as shown in the Plans, per these special provisions and CDWM standards. All excavation required to install the vault and all backfill to complete the installation will be considered as part of the vault installation.

Basis of Payment. This work will be paid for at the contract unit price per each for WATER VALVES, 8" and WATER VALVES, 12", which price will be payment in full for all labor, equipment and materials necessary to complete the work as described.

TRENCH BACKFILL will be paid for separately.

Excavation in rock will be paid for according to Article 502.13.

Trench backfill will be paid for according to Article 208.04.

Removal and replacement of unsuitable material below plan bedding grade will be paid for according to Article 109.04.

BUTTERFLY VALVES 36"

Description. The work under this item consists of installing a new 36" butterfly valve, valve basin and two pitometer tap basins for the relocation of the 36" water main. The work shall be performed as detailed on the Plans, specified herein and directed by the IDOT Resident Engineer and the Chicago Department of Water Management Commissioner or his representative (Engineer).

Water main structures shall be installed according to Article 602 of the "Standard Specifications" and in conformance with City of Chicago Department of Water Management Standards and Technical Specifications.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service prior to the start-up date established in coordination with the CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM.

Construction Requirements. The furnishing and installation of 36" butterfly valve, valve basin and pitometer tap basins for the relocation of the 36" water main shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Water Main Control Valves	Section 33 12 16
Water Main Valve Basins & Meter Vaults	Section 33 12 20
Hydrostatic Testing and Disinfecting Water Mains	Section 33 13 00

Testing and disinfecting as required by the City of Chicago Department of Water Management is included under this item.

Any water main dewatering required during this work shall be considered included as part of the successful installation of the 36" butterfly valve.

Method of Measurement. This work will be paid for per each 36" butterfly valve, valve basin and two pitometer tap basins installed as shown in the Plans, per these special provisions and CDWM standards. All excavation required to install the vault and all backfill to complete the installation will be considered as part of the vault installation.

Basis of Payment. This work will be paid for at the contract unit price per each for BUTTERFLY VALVES 36" which price will be payment in full for all labor, equipment and materials necessary to complete the work as described.

TRENCH BACKFILL will be paid for separately.

Excavation in rock will be paid for according to Article 502.13.

Trench backfill will be paid for according to Article 208.04.

Removal and replacement of unsuitable material below plan bedding grade will be paid for according to Article 109.04.

MANHOLE, SPECIAL

Description. The work under this item consists of installing a new 5' diameter inspection manhole on the relocation of the 36" water main. The structure shall be in conformance with Chicago Department of Water Management (CDWM) standards as shown in the Plans. The work shall be performed as detailed on the Plans, specified herein and directed by the IDOT Resident Engineer and the Chicago Department of Water Management Commissioner or his representative (Engineer).

Water main structures shall be installed according to Article 602 of the "Standard Specifications" and in conformance with City of Chicago Department of Water Management Standards and Technical Specifications.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service prior to the start-up date established in coordination with the CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM.

Construction Requirements. The furnishing and installation of inspection manholes shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Water Main Valve Basins & Meter Vaults Section 33 12 20

Method of Measurement. This work will be paid for per each manhole basin installed as shown in the Plans, per these special provisions and CDWM standards. All excavation required to install the manhole and all backfill to complete the installation will be considered as part of the vault installation.

Basis of Payment. This work will be paid for at the contract unit price per each for MANHOLE, SPECIAL which price will be payment in full for all labor, equipment and materials necessary to complete the work as described.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04

FIRE HYDRANTS

Description. This work will consist of the installation of new fire hydrants at locations specified, and as agreed to by the City of Chicago Department of Water Management.

Hydrants shall be installed according to Article 564 of the "Standard Specifications" and in conformance with City of Chicago Department of Water Management Standards and Technical Specifications.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service.

Construction Requirements. The furnishing and installation of ductile iron hydrants, fittings, and other appurtenances for the installation fire hydrants shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Ductile Iron Pipe and Fittings	Section 33 11 13
Fire Hydrants	Section 33 12 19
Hydrostatic Testing and Disinfecting Water Mains	Section 33 13 00

Testing and disinfecting as required by the City of Chicago Department of Water Management is included under this item.

Any water main dewatering required during the installation and testing of the fire hydrants shall be considered included as part of the successful installation of the fire hydrants.

Method of Measurement. This work will be paid for per each fire hydrant installed and accepted.

Basis of Payment. This work will be paid for at the contract unit price per each for FIRE HYDRANTS and includes all necessary thrust restraint.

TAPPING VALVES AND SLEEVES 36"

Description. This work will consist of the complete installation of a new tapping connection to the existing 36" water main for the relocation of the 8" water main fire hydrant lead. The location and configuration of the new tapping connection shall be coordinated with the City of Chicago Department of Water Management. The location should be along a smooth section of existing pipe, away from existing joints and fittings.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service.

Construction Requirements. The installation of the 36" x 8" tapping sleeve and valve shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Ductile Iron Pipe and Fittings	Section 33 11 13
Water Main Tapping Connections and Valves	Section 33 12 17
Hydrostatic Testing and Disinfecting Water Mains	Section 33 13 00

The tapping sleeve and valve shall include all necessary components to make a hot tap connection to the 36" water main, although the CDWM may have the main shut down during the execution of the work.

Testing and disinfecting as required by the City of Chicago Department of Water Management is included under this item.

Any water main dewatering required during this work shall be considered included as part of the successful execution of the installation of the tapping sleeve.

Method of Measurement. This work will be paid for per each 36" x 8" tapping sleeve and valve installed and accepted as part of the successful installation of the new 8" water main and hydrant.

Basis of Payment. This work will be paid for at the contract unit price per each for TAPPING VALVES AND SLEEVES 36" includes all necessary excavation, temporary pipe support, bracing, backfill and other work required to install the new 8" water main connection to the existing 36" water main.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04

REMOVE AND REPLACE TAPPING SLEEVES, 36"

Description. This work will consist of the complete removal of any existing tapping sleeve and valve on 36" water main and the installation of a new tapping sleeve to enclose the existing opening as coordinated with the City of Chicago Department of Water Management.

The Contractor is advised that the work will be performed on a potable water system owned and operated by the Chicago Department of Water Management (CDWM). As such, all operations shall be performed in such a way as to avoid contamination of the water system through the introduction of contaminants or the process of the work. All work will require the review and approval of the CDWM prior to the commencement of work operations.

The water main shutdown required to perform the Work will only be allowed based upon scheduling by CDWM. The Work must be substantially complete in order to place the water main back into service in coordination with CDWM. The construction schedule must clearly indicate when testing of the new water main items will be made and for the water main to be inspected by CDWM prior to placing the new water main into service.

Construction Requirements. The removal and replacement of the existing 36" x 8" tapping sleeve and valve shall conform to the Contract and the applicable sections of the Chicago Department of Water Management's Technical Specifications for Water Main Construction shown below and included as part of this special provision (See Appendix A):

Ductile Iron Pipe and Fittings	Section 33 11 13
Water Main Tapping Connections and Valves	Section 33 12 17
Hydrostatic Testing and Disinfecting Water Mains	Section 33 13 00

Material selection for the proposed sleeve to be used to enclose the existing opening shall be coordinated with and approved by CDWM. An 8" ductile iron blind flange shall be provided to seal the outlet of the proposed tapping sleeve. No tapping valve is required to be installed.

Testing and disinfecting as required by the City of Chicago Department of Water Management is included under this item.

Any water main dewatering required during this work shall be considered included as part of the successful execution of the removal and replacement of the tapping sleeve.

Method of Measurement. This work will be paid for per each existing tapping sleeve removed and replaced with a new tapping sleeve installed and accepted.

Basis of Payment. This work will be paid for at the contract unit price per each for TAPPING SLEEVES TO BE REMOVED AND REPLACED, 36" includes all necessary excavation, temporary pipe support, bracing, backfill and other work required to remove the existing tapping sleeve and enclose the existing connection. Proper disposal of removed items is included within this item.

TRENCH BACKFILL will be paid for separately.

Trench backfill will be paid for according to Article 208.04

Removal and replacement of unsuitable material below plan bedding grade will be paid for according to Article 109.04.

CITY OF CHICAGO DEPARTMENT OF WATER MANAGEMENT ENGINEERING SERVICES

Description. This item shall consist of payment for work performed by the City of Chicago Department of Water Management (CDWM) related to engineering services in support of this contract. These services include operations related to the shutting down and startup of the existing water mains, testing and inspection during the installation of the proposed water main relocations, water quality testing, leakage survey, field supervision, technical assistance, reviews and other required services.

General. It shall be the Contractor's responsibility to arrange and coordinate all required services by CDWM. All necessary field work, including valve operations, shall be scheduled with CDWM in advance of the time period required. All work to be performed by CDWM is subject to CDWM work schedules and availability. Acceptance of complete water main by CDWM is based upon CDWM review of installation, presence during testing and disinfection operations and other roles as desired by CDWM and required in these special provisions.

Construction Requirements. The Contractor shall make the following submittals and notifications for the water facility work included in this contract:

- Submit five (5) copies of the shop drawings for all water main materials to be used to complete this water main installation. Shop drawings shall be sent to the Department of Water Management, Bureau of Engineering Services, Jardine Water Purification Plant, 1000 E. Ohio Street, Office 307, Chicago, Illinois 60611, attention to Bill Doyle.
- Notify Bill Doyle, at (312) 217-1636, two (2) weeks prior to the start of the water main work, so a resident engineer can be assigned to the project.
- Obtain a “B-Permit” prior to construction from the City of Chicago, Department of Buildings, Plumbing Permit and Plan Section, City Hall, 121 North LaSalle Street, Room 906, Chicago, Illinois, 60602.
- Contact John Flynn of the Department of Buildings, Plumbing Permit and Plan Section at (312) 744-7063 regarding the proposed water service installations.
- Submit as-built drawings within two (2) weeks of completion of the work. The as-built drawings should be submitted to the Department of Water Management, Bureau of Engineering Services, Jardine Water Purification Plant, 1000 E. Ohio Street, Room 306, Chicago, Illinois 60611, attention to Rolando Villalon.

Failure to comply with these requirements may result in additional expenses to the project to verify that all work conforms to the CDWM’s standards.

Additionally, the CDWM maintains existing 36-inch feeder mains located in E. 25th Street, S. Donnelly Drive, S. Mines Drive, and beneath the Illinois Central Railroad that are within close proximity of the proposed improvements. The proposed piers must maintain a minimum horizontal clearance (edge-to-edge) of five (5) feet from all existing water facilities, however the maximum clearance possible should be met whenever possible. Hand excavation is required to field verify the horizontal and vertical location of the above feeder mains prior to the pier installations.

In order to accommodate the proposed improvements, the CDWM will conduct a leakage survey on each of the following water mains located within the proximity of the proposed bridge improvements before and after the proposed construction to ensure they are not damaged during the pier installations:

- 36-inch feeder main located in E. 25th Street, S. Donnelly Drive and S. Lake Shore Drive
- 36-inch feeder main located in S. Mines Drive
- 24-inch feeder main located in S. Lake Shore Drive
- 12-inch water main located in S. Donnelly Drive

If any damage occurs to these water facilities during the proposed improvements, the Contractor will be held responsible for the cost of repairing or replacing the water mains as necessary.

Method of Payment. The Contractor will make payments to CDWM based upon the following schedule agreed to with CDWM:

- 80% of initial estimate of costs and 100% of fixed fee required by CDWM. CDWM has identified to the Department that the total cost for these two items is $55,900.00 ($49,900.00 for estimated services and $6,000 fixed fee for leakage survey).

- This payment shall be made to CDWM within ten (10) days of contract award using certified check, certified mail and receipt notification. The receipt is to be provided to the Engineer for records.

- Two certified check in the amounts of $39,920.00 and $6,000, payable to the City of Chicago, must be sent or hand delivered to the Department of Buildings, Plumbing Permit and Plan Section, Room 906, City Hall, 121 North LaSalle Street, Chicago, Illinois 60602

- Remaining balance at the completion of services by CDWM as invoiced including back up information.

- The estimated cost of services is an assumption subject to the receipt of the actual final estimate from CDWM. The initial estimate of costs subject to the first payment to CDWM will be based upon the actual estimate from CDWM. The initial assumption identified above is for bidding purposes only. The amount necessary for the first payment may exceed the amount calculated above.

CDWM will invoice the final amount based upon current rates for labor (straight time), material, equipment, overhead charges and other costs incurred.

The Contractor will be reimbursed based upon the requirements identified in Section 109.05, including administrative costs. The Contractor shall secure invoices from CDWM for work performed by CDWM. These invoices shall be submitted as documentation to the Department prior to or with any Contractor payment request for the remaining balance at the completion of work related to CDWM facilities.

For bidding purposes, this item shall be estimated as $56,859.00, which includes the estimated costs and fixed fee from CDWM with additional administrative costs per Section 109.05.

Basis of Payment. This work will be paid for at the contract lump sum price for CITY OF CHICAGO DEPARTMENT OF WATER MANAGEMENT ENGINEERING SERVICES which shall be reimbursement in full, and with administrative costs as described in Section 109.05, for services provided by CDWM.

APPENDIX A – CHICAGO DEPARTMENT OF WATER MANAGEMENT (CDWM) TECHNICAL SPECIFICATIONS FOR WATER MAIN CONSTRUCTION

This specification amends the Chicago Department of Water Management (CDWM) Technical Specifications for Water Main Construction included in Appendix A and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the Contract:

1. Revise all references to the Commissioner to the Engineer.

2. Section 33 11 13 – Ductile Iron Water Pipe and Fittings
    a) Delete Articles 1.2 A, B, C.
    b) Delete Article 1.4 A.
    c) Modify Article 1.6 E to "All existing valves must be operated only be personnel of the Department of Water Management. Notify the Department of Water Management seventy-two (72) hours prior to the need for operation of the valve."
    d) Modify Article 2.2 B to "Pipe joints must be restrained joints as noted on the Drawings, specified here, or as directed by the Engineer."
    e) Delete Article 2.7.
    f) Modify Article 3.4 C to delete "as per Section 33 23 19 Dewatering Excavations".
    g) Modify Article 3.4 D to delete "in accordance with Section 31 23 10 Excavation, Trenching and Backfilling".
    h) Delete Article 3.7.
    i) Modify Article 3.13 to delete "CLSM flowable material must meet standards specified in Section 31 23 10, "Excavation, Trenching and Backfilling", paragraph 2.3, C of these specifications."
    j) Modify Article 3.14 A to delete "as specified in Section 31 23 10, "Excavation, Trenching and Backfilling".
    k) Delete Article 3.15.

3. Section 33 11 15 – Thrust Restraint for Water Main Piping.
    a) Delete Article 2.3.
    b) Delete Article 3.3.

4. Section 33 12 16 – Water Main Control Valves
    a) Modify Article 1.1 A to delete "resilient wedge valves".
    b) Modify Article 1.4 A to delete "butterfly".
    c) Modify Article 2.1 M to replace "Department" with "Engineer".
    d) Modify Article 2.1 N to replace all instances of "Department" with "Engineer".
    e) Delete Article 2.2.
    f) Delete Article 2.4.
    g) Delete Article 3.3.

5. Section 33 12 17 – Water Main Tapping Connections and Valves
    a) Modify Article 1.1 A to delete “and concrete”.
    b) Delete Article 1.2 A.
    c) Delete Article 1.4 A.
    d) Delete Article 2.2
    e) Modify Article 2.6 A to delete “as specified in Section 03 30 00 – Cast-In-Place Concrete”.
    f) Delete Article 3.1.

6. Section 33 12 19 – Fire Hydrants
    a) No amendments

7. Section 33 12 20 – Water Main Valve Basins & Meter Vaults
    a) Modify Article 1.1 A to “This Section includes requirements for construction and/or adjustment of water main valve basins using precast concrete structures.”
    b) Delete Article 1.2.
    c) Delete Article 1.4 A.
    d) Modify Article 1.4 B to “Shop Drawings: Submit detailed drawings of precast utility structures and related metal work.”
    e) Delete Articles 2.6, 2.7, 2.8, and 2.9.
    f) Delete Articles 3.1 and 3.3.
    g) Modify Article 3.5 A to delete “CLSM flowable material must meet standards specified in Section 31 23 10, “Excavation, Trenching and Backfilling”, paragraph 2.3, C of these specifications.”

8. Section 33 13 00 – Hydrostatic Testing & Disinfecting Water Mains
    a) Modify Article 3.11 to “For all types of flushing, the Contractor must prepare and submit a flushing plan to the Engineer that indicates the City sewers to which discharges are planned and the flow rates. Flushing must be performed in accordance with the flow rates on the plan approved by the Engineer.

SECTION 33 11 13

DUCTILE IRON WATER PIPE AND FITTINGS

1.2 PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes requirements for the installation of ductile iron water pipe and fittings as shown on the drawings and specified here.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

A. Section 31 23 19 - Dewatering Excavations.
B. Section 31 23 10 - Excavation, Trenching and Backfilling.
C. Section 33 11 15 - Thrust Restraint.
D. Section 33 13 00 - Disinfection and Testing of Water Mains.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. AWWA C104 - Cement Mortar Lining for Ductile Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111 - Rubber Rubber-Gasket Joints for Ductile-Iron Pressure pipe and Fittings.
5. AWWA C115 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray- Iron Threaded Flanges.
6. AWWA C116 - Protective Fusion-Bonded Epoxy Coatings Int. and Ext. Surf. Ductile-Iron/Gray-Iron Fittings.
7. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
8. AWWA C151 - Ductile Iron Pipe, Centrifugally Cast.
9. AWWA C153 - Ductile Iron Compact Fittings for Water Service.
10. ASME/ANSI B16.1 - Flanges and Flanged Fittings.
11. ANSI B16.21 - Metallic Gaskets for Pipe Flanges.
12. ASME B18.2.1 - Square and Hex Bolts and Screws.
13. ASME B18.2.2 - Square and Hex Nuts.
14. ASTM A123 - Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
15. ASTM A153 - Zinc Coating (Hot Dip) on Iron and Steel.
16. ASTM A240 - Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip, for Pressure Vessels and for General Applications.
17. ASTM A307 - Carbon Steel Bolts and Studs.

18. ASTM A536 - Ductile Iron Castings.
19. ASTM A767 - Zinc Coated (galvanized) Steel.
20. ASTM A775 - Epoxy Coated Steel.
21. ASTM A780-93 - Repair of Zinc Coated (Galvanized) Steel.
22. ASTM B308 – Stainless Steel Alloy Standard Structural Shapes, Rolled, or Extruded.
23. ASTM C564 - Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
24. ANSI A21.5/AWWA C105 - Polyethylene Encasement.

1.4 SUBMITTALS

A. Refer to Book I for submittal requirements and procedures for Shop Drawings, Product Data, Records and Samples.

B. The Contractor must give notice in writing to the Commissioner, sufficiently in advance of his intention to purchase or place a special order for any pipe required to be installed under this contract. Fully dimensioned drawings and/or manufactures catalog cuts are to be submitted for review.

C. The Contractor must submit to the Commissioner certified copies of all test reports for test conducted on the pipe by the manufacture when so requested by the Commissioner.

D. The Contractor must provide the Commissioner with a notarized statement that all tests have been made and met as specified.

1.5 QUALITY ASSURANCE

A. Each manufacturer supplying pipe for water mains under this contract must furnish all facilities, personnel, and materials to conduct tests required as applicable to the type of pipe being supplied, when requested by the Commissioner. The cost of all plant tests required as proof of the acceptability of the water main pipe will be considered incidental to the Work and no additional payment will be allowed.

B. **The Work performed on joining all pipe and fittings, must be performed by a plumber licensed in the State of Illinois or the City. This Work must include, but not be limited to, joining all pipe and fittings, installing joint gaskets, assembling all joints, installing continuity wedges, and tightening all gland nuts and bolts, as applicable for the installation.**

1.6 NOTIFICATION AND LIMITATIONS OF WATER MAIN SHUT DOWNS

A. Whenever an existing water main or a section thereof is to be shut down during the course of construction, every individual consumer must be notified at least seventy-two (72) hours prior to the shutdown. The Contractor must never operate, under any circumstances, an existing valve for a shut down or other purpose without first notifying and obtaining approval from the Commissioner.

B. The time for a consumer shut down must not exceed eight (8) hours. Absolutely no shut downs will be permitted before 8:00 AM without approval from the Commissioner.

C. In case of emergency shut downs, the Contractor must notify customers immediately. Notification may be verbal on a door-to-door basis. However, if a consumer cannot be contacted, a written notice must be placed at the property site showing all pertinent information regarding the shutdown. The notice must show a telephone number the consumer may call for information or to express any problem that the consumer may have with the shutdown.

D. If a consumer cannot withstand a planned shut down due to a dialysis machine being present or other medical reason, the Commissioner must be notified immediately.

E. All valves 16-Inches in diameter and larger must be operated only by personnel of the Department. Notify the Commissioner seventy-two (72) hours prior to the need for operation of the valve.

ART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE

A. Ductile iron pipe must conform to the requirements of AWWA C151 and with the additions or substitutions specified in this Section.

B. Pipe bells must be designed to provide a watertight joint without leakage and must be capable of withstanding pressures exceeding those that will rupture pipe of this class and thickness without requiring additional jointing material.

C. Electrical conductivity must be provided at each joint on all push-on and mechanical jointed pipe 16-Inches in diameter and smaller, to facilitate thawing of frozen pipe and building water services. It must also be provided on pipe 24-inches in diameter and larger when building services are directly connected to the water main. Conductivity is to be accomplished by installing serrated silicon wedges as recommended or supplied by the pipe manufacture. **The use of lead tip gaskets will not be allowed.** Wedges are to be installed in accordance with the requirements of paragraph C in Articles 3.6 and 3.7 of this specification.

D. All pipes must be manufactured so that where a cut is made at any point along the barrel, the cut end will fit properly into a standard mechanical joint bell and be drip tight at hydrostatic test pressure.

E. Exterior of pipe must be coated with a petroleum asphaltic material in conformance with AWWA C110, Section 10-10. Interior of pipe must be cement lined in accordance with AWWA C104.

F. Pipe thickness and classes must conform to standards shown in Table A.

1.3 **TABLE A PIPE THICKNESS AND CLASS**

Pipe Size	Nominal Wall Thickness	Thickness Class
3-inch	0.34-inch	54
4-inch	0.38-inch	55
6-inch	0.40-inch	55
8-inch	0.45-inch	56
10-inch	0.47-inch	56
12-inch	0.49-inch	56
14-inch	0.48-inch	55
16-inch	0.46-inch	54
18-inch	0.44-inch	53
20-inch	0.45-inch	53
24-inch	0.50-inch	54
30-inch	0.47-inch	52
36-inch	0.53-inch	52
42-inch	0.59-inch	52
48-inch	0.65-inch	52
54-inch	0.73-inch	52
60-inch	0.77-inch	52

2.2 JOINTS

A. **LEAD JOINTS ARE NOT TO BE USED UNDER ANY CIRCUMSTANCES.**

B. Pipe joints must be push-on type joints unless otherwise noted on the drawings, specified here, or directed by the Commissioner. Push-on type joints must conform to AWWA C111.

C. Restrained joints when specified are to meet the following requirements:

1. Mechanical joint pipe with mechanical joint restraint glands. Mechanical joints must conform to AWWA C110. Gaskets must conform to Section 2.4 of this specification.

2. Restrained joint pipe with manufactured weldment, field weldments or manufactured locking rings, locking segments and runner retainers and appurtenances conforming to AWWA C110. Acceptable products are Super-Lock Pipe manufactured by Clow Water Systems Company; FlexRing Pipe or Lok-Ring Pipe manufactured by American Ductile Iron Pipe; or TRFLEX manufactured by United States Pipe and Foundry Company.

D. Mechanical Joint Restraint Glands.

1. Provide restraint glands at all mechanical joints.

2. Restraint glands must be designed for use with the standardized mechanical joint bell pipe conforming to AWWA C110 and AWWA C153. Restraint is to be incorporated into the design of the gland. Acceptable products for this use are Mega Lugs manufactured by EBAA Iron Works; Uniflange manufactured by Ford Meter Box; or Star Grip manufactured by Star Pipe Products.

3. Restraint is to be accomplished by the use of multiple, wedge style restraints. Proper actuation of the wedges is to be ensured with torque limiting twist off nuts.

4. Glands 3-Inches through 16-Inches are to be pressure rated at 350-psi; glands 18-Inch through 48-Inch are to be rated at 250 psi.

5. The gland body and restraint components are to be made from ductile iron conforming to ASTM A536, 65-45-12. Ductile iron wedges are to be heat-treated within a range of 370 to 470 BHN.

6. The joint is to be capable of full deflection during assembly and joint deflection after assembly

7. Provide glands with minimum weights and number of wedges as shown in Table B.

8. Retainer glands are not acceptable.

TABLE B – MINIMUM WEIGHT & NUMBER OF WEDGES PER RESTRAINED JOINT

Pipe Size.	Number of Wedges	Minimum Weight
3-inch	2	6.0-lbs
4-inch	2	7.0-lbs
6-inch	3	11.0-lbs
8-inch	4	14.5-lbs
10-inch	6	23.0-lbs
12-inch	8	28.5-lbs
14-inch	10	46.0-lbs
16-inch	12	52.0-lbs
18-inch	12	63.6-lbs
20-inch	14	71.0-lbs
24-inch	16	90.0-lbs
30-inch	20	190.7-lbs
36-inch	24	226.5-lbs
42-inch	28	400.0-lbs
48-inch	32	488.0-lbs

E. Flanged joints, when shown on the Drawings, specified, or directed by the Commissioner, must conform to the following:

1. Flanged joints must conform to AWWA C115. Flanges must be the long hub type, screwed on the threaded end of the pipe in the shop. There must be no leakage through the pipe threads. The flanges must be designed to prevent corrosion of the threads from the outside.

2. Flanges must be drilled according to the requirements of ANSI/ASME B16.1, Class 125 unless special drilling is called for on the Drawings, specified, or directed by the Commissioner. Bolt holes must be equally spaced, drilled smooth and true. When stud bolts are used flanges must be drilled and tapped to accommodate the studs.

3. The face of the screwed-on flange and plain-end of the pipe must be accurately refaced together, at right angles to the pipe axis. After facing and drilling, the face of the screwed-on flange must immediately be covered with an appropriate rust-preventive coating.

4. Flanged joints must be secured with either bolts and nuts, or stud bolts with a nuts. Bolts, stud bolts, and nuts must meet the requirements of ASTM A307, Grade B. Bolts and stud bolts must conform to ANSI/ASME B18.2.1. Nuts must conform to ANSI/ASME B18.2.2. All bolts, stud bolts, and nuts must be primed with bitumastic paint after the bolts and nuts have been installed and tightened.

5. Gaskets must conform to Section 2.4 of this specification.

2.3 FITTINGS

A. Fittings to be furnished and installed as specified or shown on the Drawings must be mechanical joint, ductile iron in accordance with AWWA C110. Laying length of mechanical joint castings must be as shown in AWWA C110. Wall thickness and allowable variation in the thickness of mechanical joint castings must conform to AWWA C110 and have a 250-psi pressure rating.

B. Compact fittings may not be used unless otherwise approved by the Commissioner.

C. Plain ends of mechanical joint fittings must be beveled and gauged to properly seat in push-on joint bells.

D. The fittings must be smooth and free from defects of every nature that would make them unfit for the use that they were intended. Plugging of fittings is not allowed. Repairing of defects by welding will be allowed if such repairs will not adversely affect the serviceability of the fittings or their ability to meet the strength requirements of the referenced AWWA standards.

E. All castings must be coated with a petroleum asphaltic material in conformance with AWWA C110, Section 10-10. Interior of pipe must be cement lined in accordance with AWWA C104.

F. Flanged fittings must conform to AWWA C110, and have a 150-pound per square inch pressure rating.

2.4 GASKETS

A. All gaskets for pipe, fittings and appurtenances must be vulcanized natural or vulcanized synthetic rubber, non-porous, free of foreign materials and visible defects. Recycled rubber may not be used.

B. When soil conditions do not permit the use of natural or synthetic rubber gaskets and when directed by the Commissioner, all gaskets for pipe, fittings and appurtenances must be Nitrile (acrylonitrile butadiene), nonporous, free of foreign materials and visible defects.

C. Gaskets for flanged joints must be of the ring type, 1/16-Inch thick, and meet the requirements of ANSI Standard B16.21. Acceptable manufactures for gaskets type as manufactured by the Crane Company; Garlock Packing Company; or U.S. Rubber Company.

D. Gaskets must be stored in a cool place and protected from light, heat, oil, or grease until installed. Any gasket showing signs of cracking, weathering, abrasion or other deterioration will be rejected.

2.5 POLYETHYLENE ENCASEMENT

A. Polyethylene encasement material must be either 8-mil, low density or 4-mil, cross-laminated, high-density polyethylene tubing in accordance with AWWA C105.

2.6 TRANSITION SLEEVES

A. Transition sleeves for pipe 16-inches in diameter and smaller must be of type as manufactured by Dresser, Style 253 Modular Cast Couplings; Smith Blair, Type 441 Cast Transition Couplings; Ford, Style FC2A Transition Couplings; Power Seal, Model 3501 Transition Couplings; or JCM Industries Model 212 Transition Couplings. Transition sleeves for pipe diameter greater than 16-inches must be of type as manufactured by Ford, Style FC2A or Style FC5 Transition Couplings; Romac Industries, Style 501 Transition Couplings; Dresser Style 38, Style 62, or Style 138 Transition Couplings; or Power Seal, Model 3501 Transition Couplings.

B. Transition sleeves must be designed to join class "B" pit cast iron pipe to AWWA C111/C151 standard ductile iron pipe. They must provide for pipe misalignment and settlement deflection and make a leak proof non- soldered joint, which allows for limited line movement due to expansion and contraction. Design couplings for a minimum rated working pressure of 150-pounds per square inch.

C. Transition sleeves pipe 16-Inches in diameter and smaller must be constructed of ductile iron conforming to ASTM A536. Transition sleeves for pipe diameters greater than 16-Inches must be constructed of ductile iron conforming to ASTM A536 or carbon steel conforming to ASTM A36. Ends must have a smooth inside taper for uniform gasket seating. The follower flanges must be ductile iron conforming to ASTM A536 or carbon steel conforming to ASTM A36.

D. Transition sleeves must be shop coated inside and outside with fusion bonded epoxy coating conforming to AWWA C-213.

E. Gaskets must be of molded rubber conforming to ASTM C564 for potable water service.

F. Bolts and nuts must be 5/8-Inch in size and must be Grade 304L stainless steel, annealed. Nuts must be Teflon coated to prevent galling during storage.

G. Each transition sleeve must be supplied with four electrical continuity brackets electrical continuity across the sleeve. The angle bracket must be made from ASTM A240-T304 stainless steel with a stainless steel set screw.

H. Contractor must field measure the existing cast iron water main for exact size of outer dimension and degree of out-of-roundness at the location to install the transition sleeve prior to ordering and installing the transition sleeve for that location.

2.7 PIPE SUPPORT SYSTEMS AND HANGERS (INTENDED FOR PERMANENT INSTALLATIONS)

A. Manufactured pipe support systems, fasteners, and miscellaneous hardware must be fabricated from high strength stainless steel conforming to ASTM B308, or hot-dipped galvanized steel conforming to ASTM 123 and ASTM 153. Pipe support systems must be designed to have a minimum load safety factor of three (3) times the anticipated loading.

B. Field fabricated pipe support systems, fasteners, and miscellaneous hardware must be cold-galvanized by painting metal surfaces with a 2-mil thick coating of ethyl silicate in-organic zinc-rich paint primer per manufacture's directions. Galvanized primer must be completely dry before backfilling the excavation. Field fabricated pipe support systems must be designed to have a minimum load safety factor of three (3) times the anticipated loading.

C. Repair damaged galvanized coated surfaces in accordance with ASTM A780-93. Apply 2-mil thick coating of ethyl silicate in-organic zinc-rich paint primer per manufacturer's directions. Zinc primer must be allowed to completely dry before backfilling the excavation.

D. Cold-galvanizing zinc primer paint must be of the inorganic, ethyl silicate type, containing at least 60% zinc dust and 40% adhesive binders, and conform to ASTM 780-93, type as manufactured by Tnemec Products, Kansas City, MO., Brite Products, Detroit, Mich., or Valspar Coatings, Minneapolis, MN.

PART 3 - EXECUTION

3.1 INSTALLATION

A. All ductile iron pipe, fittings, and appurtenances must be installed in accordance with the manufacturer's recommendations and requirements.

B. All pipe, fittings, and accessories must be delivered, unloaded, strung, and laid as specified here.

C. The water mains must be laid with depths of cover as indicated under Article 3.12 of this specification, unless otherwise shown on the drawings, or directed by the Commissioner. The pipes must be laid true to line and grade.

D. Fittings as specified must be used where shown on the drawings and where grade or alignment changes require offsets greater than those recommended by the pipe manufacturer.

3.2 TRANSPORTATION, DELIVERY AND STORAGE

A. Every precaution must be taken to prevent damage to the pipe during transportation and delivery. Pipe ends, fittings, valves and hydrants must be sealed with caps or by another suitable method upon transportation from the supplier. Caps or end seals must be sturdy, secure, and wind- resistant so as to protect the pipe at all times prior to installation. Extreme care must be taken in loading and unloading the pipe and fittings. Such work must be done slowly with skids or suitable power equipment and the pipe must be under complete control at all times. Under no conditions may the pipe be dropped, bumped, dragged, pushed, or moved in any way that will cause damage to the pipe. When handling the pipe with a crane, a suitable pipe hook or rope sling around the pipe must be used. Under no condition may the sling be allowed to pass through the pipe unless adequate measures are taken to prevent damage to the pipe ends and lining.

B. If in the process of transportation, handling, or installation, any pipe or fitting is damaged, such pipe or fitting must be replaced by the Contractor and be considered incidental to the construction and no additional payment will be allowed.

C. The Contractor must store pipe in a manner that will prevent damage. Pipe must be placed on wooden timbers or another suitable support on level ground. The Contractor must prevent the pipe from rolling. The procedures used to prevent rolling must be approved by the Commissioner

3.3 PREPARATION FOR LAYING PIPE

A. Materials, coatings, and linings must be as specified herein, shown on drawings, or directed by the Commissioner. Water mains and services must be installed where shown on the drawings. Installation must be in accordance with standards as recommended by the pipe manufacturer, and as specified herein.

B. Proper and suitable tools and appliances for the safe and convenient cutting, handling, and laying of the pipe and fittings must be used.

C. Before lying, all pipe and fittings must be thoroughly examined for defects and no piece may be installed which is known to be defective. If defects are discovered after pipe or fittings have been installed, the Contractor must remove the defective pipe and/or fitting and replace it with a sound one at his expense and to the satisfaction of the Commissioner.

D. The pipe and fittings must be thoroughly cleaned before they are laid and must be kept clean until they are accepted in the finished work. Care must be exercised to avoid leaving bits of wood, dirt, rock and other foreign particles in the pipe. If any such materials are discovered before the final acceptance of the work, they must be removed and the pipe and fittings replaced, if necessary. All pipes must be kept absolutely clean during construction and must be stopped off with night plugs at the end of each day's work. Exposed ends of uncompleted lines and existing water mains and services cut and not abandoned must be capped or otherwise temporarily sealed at all times when pipe laying is not in progress.

E. When cutting ductile iron pipe, it must be neatly cut perpendicular to the longitudinal axis of the pipe without damaging the pipes lining or coating or jointing surface area.

3.4 LAYING WATER MAIN PIPE

A. All pipelines must be laid in trench excavations on bedding or other foundations, as shown on the drawings, specified herein, or ordered by the Commissioner. The pipe must be properly secured against movement and pipe joints must be made in the excavation as required. Pipes must have solid bearing throughout their entire length.

B. At locations where pipe thrust is anticipated to occur, pipe and fittings must be anchored or restrained as shown on the drawings, specified in Section 33 11 15 – Thrust Restraint, or as directed by the Commissioner. **Polyethylene encasement is to be installed on all new water main pipe and fittings before pipe is installed and braced against movement**. Care must be taken so as not to damage the polyethylene encasement during the installation or blocking of the pipe and fittings. If damage occurs, the Contractor must repair or replace the polyethylene encasement at his expense to the satisfaction of the Commissioner.

C. Pipe lying will be permitted only in dry trenches having a stable bottom. Groundwater or water from other sources must be removed as per Section 31 23 19 – Dewatering Excavations. If the trench bottom is unsuitable for the pipes foundation, the kind of stabilization to be utilized will be ordered in writing.

D. If, in the opinion of the Commissioner, the Contractor has failed to obtain an acceptably dry trench bottom using conventional methods of dewatering, the Commissioner may order the Contractor to excavate below the intended grade and to place sufficient sub-grade material as may be suitable over the trench bottom in accordance with Section 31 23 10 – Excavation, Trenching and Backfilling.

E. The Contractor must also take such required precautions to prevent flotation of the new pipeline.

3.5 ASSEMBLY OF FLANGED JOINTS

A. Flanged joints must be made with bolts or bolt studs with nuts as specified in Section 2.2 of this specification.

B. Tighten flange bolts as recommended by the gasket manufacturer to ensure an evenly compressed gasket and leak tight joint.

C. After the bolts and nuts have been properly installed, tightened, and cleaned, prime them with bitumastic paint.

3.6 ASSEMBLY OF MECHANICAL JOINTS

A. Thoroughly brush the surfaces with which the rubber gasket comes in contact with a wire brush just prior to assembly of the joint. Brush lubricant over the gasket and the plain end just prior to installation. In making up mechanical joints, the spigot must be centered in the bell.

B. The gasket and gland must be placed in position, the bolts inserted, and the nuts tightened finger tight. The nuts must be tightened by means of a torque wrench in such a manner that the gland must be brought up evenly into the joint.

C. Joints are to be made up to allow electrical continuity from one pipe to another by installing wedges as specified in Article 2.1, paragraph C of this specification and are to be installed in the following manner:

1. Use two (2) wedges per joint for 3-Inch to 12-Inch diameter pipes. Wedges must be placed on opposite sides of the joint at an equal distance apart (9 and 3 o'clock positions) around the joint.

2. Use four (4) wedges per joint for 16-inch to 24-inch diameter pipes. Wedges must be installed side by side in pairs placed on opposite sides of the joint at an equal distance apart (9 and 3 o'clock positions) around the joint.
3. Use six (6) wedges per joint for pipes larger than 24-inches in diameter only if building services are directly connected to the main. Wedges must be installed side by side in pairs 120 degrees apart at the 12, 4, and 8 o'clock positions around the joint.

D. The following range of bolt torques must be applied as specified in Table C. If sealing is not obtained at the maximum torque requirements listed in Table C, the joint must be disassembled, thoroughly cleaned, and reassembled.

1.4 **TABLE C – BOLT TORQUE REQUIREMENTS**

Bolt Size	**Torque Range**
5/8-inch	45-60 ft-lbs
¾-inch	75-90 ft-lbs
1-inch	85-100 ft-lbs
1 1/4inches	105-120 ft-lbs

3.7 ASSEMBLY OF PUSH-ON RUBBER GASKET JOINTS

A. Thoroughly brush the gasket seat in the bell with a wire brush and wipe the gasket and gasket seat with a cloth. Place the gasket in the socket with the large round end entering first so that the groove fits over the bead in the seat. Apply a thin film of NSF 61 approved joint lubricant to the inside surface of the gasket that will come into contact with the entering pipe.

B. Thoroughly brush the plain end of the pipe with a wire brush and placed it in alignment with the bell of the pipe to which it is to be joined. Make up the joint by exerting sufficient force on the entering pipe so that its plain end is moved past the gasket until it makes contact with the base of the socket.

C. Joints are to be made up to provide electrical continuity from one pipe to another by installing wedges as specified in Article 2.1, paragraph C of this specification and are to be installed in the following manner:

1. Use two (2) wedges per joint for 3-Inch to 12-Inch diameter pipes. Wedges must be placed on opposite sides of the joint at an equal distance apart (9 and 3 o'clock positions) around the joint.

2. Use four (4) wedges per joint for 16-Inch to 24-Inch diameter pipes. Wedges must be installed side by side in pairs placed on opposite sides of the joint at an equal distance apart (9 and 3 o'clock positions) around the joint.

3. Use six (6) wedges per joint for pipes larger than 24-Inches in diameter only if building services are directly connected to the main. Wedges must be installed side by side in pairs 120 degrees apart at the 12, 4, and 8 o'clock positions around the joint.

D. Assemble restrained joint pipe in accordance with manufacturer's instructions.

3.8 TEMPORARY BULKHEADS

A. At ends of constructed sections where adjoining water mains or structures have not been completed and are not ready to be connected, temporary bulkheads must be used.

3.9 SHORT TUNNEL CONSTRUCTION

A. Pipes to be placed in short tunnels must be jointed prior to being pulled into position. Pipe must be pushed or pulled into position in a manner arranged to keep joints tight and to prevent deflection.

3.10 ENCASING DUCTILE IRON PIPE IN POLYETHYLENE

A. All cast and ductile iron pipe and fittings must be encased in polyethylene tubing before being installed, blocked, or braced.

3.11 USE OF DAMAGED, DEFECTIVE, OR NON-SPECIFIED CASTINGS AND FITTINGS

A. All construction castings and pipe fittings that are determined to be damaged, defective or do not meet these specifications and are stored within the Work area must be marked for non-use and removed and replaced with fittings that conform to these Specifications.

3.12 DEPTH OF PIPE COVER

A. Unless otherwise shown on the Plans or directed by the Commissioner, all water mains and services must be installed so a minimum pipe cover is achieved as shown in Table D.

1.5 **TABLE D – MINIMUM DEPTH OF COVER FOR WATER MAINS**

Size of Pipe	Depth of Cover
3/4 to 3-inches	5-ft 6-inches ± 3-inches
4-inch	5-ft 6-inches ± 3-inches
6-inch	5-ft 6-inches ± 3-inches
8-inch	5-ft 3-inches ± 3-inches
12-inch	5-ft ± 2-inches
16-inch	4-ft 6-inches ± 2-inches
24-inch	4-ft ± 1-inch
30 to 42-inches	3-ft 6-inches (min) or as detailed on drawings
48-inches & Larger	3-ft (min) or as detailed on drawings

3.13 ABANDONMENT OF EXISTING WATER MAINS

A. All openings on abandoned pipe or conduit are to be sealed with a concrete mortar plug of a minimum of one (1) foot in length within the pipe. Pipe 16-Inches in diameter and larger must be filled with fine graded aggregate or controlled low strength material (CLSM) flowable fill, as appropriate, or directed by the Commissioner. CLSM flowable material must meet standards specified in Section 31 23 10, “Excavation, Trenching and Backfilling”, paragraph 2.3, C of these specifications.

3.14 DISINFECTION OF PIPE AND FITTINGS

A. Protect new and existing pipe and fittings from water, debris and foreign materials as specified in Section 31 23 10 – “Excavation, Trenching and Backfilling”.

B. All new pipe, fittings, and valves must be disinfected in accordance with Section 33 13 00 – “Disinfection and Testing of Water Mains”, and the requirements of the Bureau of Water Quality which may be contacted at 312.744.8190.

C. Swab all pipe and fittings that will not be pressure tested or chlorinated with a chlorine solution during installation. Extra precautions must be taken to prevent debris or ground water from entering the section of water main to be swabbed. Incorporate untested section of water main into the flushing routine when the work is necessitated, or part of, a water main replacement project. When connecting pipes to the existing city water system use normal operating pressure to visually inspect for leaks. If feasible, inspect for leaks prior to backfilling the excavation. Comply with all standards and requirements of the Bureau of Water Quality.

3.15 WATER MAIN SUPPORT SYSTEMS

A. Support and anchor all piping in proper position and alignment with due allowance for expansion and contraction.

B. The type, location, and arrangement of hangers and supports must be as shown on the drawings, or as directed by the Commissioner. Pipe supports and hardware must be appropriate to meet installation conditions, anticipated loading, and fabricated from corrosion resistant materials described in paragraph 2.7 - Pipe Support and Hangers, of this specification. All support systems whether pre-manufactured or field fabricated must have a minimum load safety factor of three (3) times the anticipated loading. Corrosion protective coatings damaged during installation of the pipe support system must be repaired per the manufactures requirements, or as directed by the Commissioner to maintain corrosion protection.

3.16 SEPARATION BETWEEN WATER AND SEWER MAINS

A. When a water main crosses above a sewer main and the vertical separation is between 18 and 6-linches, as measured between the bottom of the water main and crown of sewer pipe, the sewer must be constructed of ductile iron pipe with rubber gasketed joints to a distance one foot beyond the wall of the trench excavation. Flexible transition coupling must be used to join the ductile iron pipe to the sewer pipe and be encased in betonite as shown on the drawings.

B. When a water main crosses below a sewer main, the sewer pipe must be constructed of ductile iron pipe with rubber gasket joints for a perpendicular distance of 10 feet on either side of the center line of the water main, and an 18-Inch vertical separation must be maintained. Flexible transition couplings must be used to join the ductile iron pipe to the sewer pipe.

END OF SECTION 33 11 13

Section 33 11 15

THRUST RESTRAINT FOR WATER MAIN PIPING

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes the requirements for providing thrust restraint for the installation of water mains and services as shown on the Drawings and specified here.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

A. Section 33 11 13 – Ductile Iron Pipe and Fittings.

1.3 Design Requirements

A. Calculated thrust restraint must be based on the frictional force and bearing resistance between the pipe and the surrounding soil, with an allowance made for the polyethylene wrap on ductile iron pipe installations.

1.4 REFERENCES

A. ANSI B1.1 - Unified Inch Screw Threads.

B. American Society for Testing and Materials (ASTM), latest edition:

1. ASTM A193 – Steel and Stainless Steel Bolting Materials
2. ASTM A194 – Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Service, or Both
3. ASTM A325 - Heat Treated Structural Steel Bolts.
4. ASTM A449 – Quenched and Tempered Steel Bolts and Nuts
5. ASTM A536 - Ductile Iron Castings.
6. ASTM A563 – Carbon and Alloy Steel Nuts
7. ASTM A615 – Standard Specification for Deformed and plain Billet Steel Bars for Concrete Reinforcement.

C. IDOT Standard Specifications for Road and Bridge Construction (SSRBC), latest edition.

PART 2 - PRODUCTS

2.1 DUCTILE IRON PIPE RESTRAINT

A. Mechanical joint thrust restraint glands must be used unless otherwise directed. Where such glands cannot be used to provide sufficient thrust restraint, concrete thrust blocks must be used, unless directed by the Commissioner.

2.2 CONCRETE THRUST BLOCK RESTRAINT

A. All concrete used in the construction of thrust blocks must be Class SI of the SSRBC.

B. All reinforcing steel used in the construction of thrust blocks must conform to the requirements of ASTM A615.

2.3 TIE ROD PIPE RESTRAINT

A. Where the use of tie rods to restrain thrust is approved by the Commissioner, they must meet the following ASTM Designations:

Tie Rod Diameter	Rods	Nuts	Washers
Up to 1-1/2"	A449	A563 Grade D	A325
Over 1-1/2"	A193	A194 Grade 2H	A325

B. Tie rod threads must be the Unified Coarse Thread Series conforming to ANSI B1.1 for rods 1-inch in diameter and smaller and 8-inch pitch thread series for larger diameters. Nuts must be hexagonal. Harness tie rod nuts must have a standard chamfer on the back face with finished spherical bearing surface. The nuts must seat in steel plate washers having similar finished concave spherical seats. Where the use of mechanical joint retainer glands are called for on the Plans or approved by the Commissioner, they must conform to ASTM A536. All special castings must be made of good quality ductile iron of such character and so adapted in chemical composition to produce spheroidal graphite structure. The iron must be of such character to provide superior mechanical properties of strength and ductility; the iron must be soft enough to satisfactorily allow drilling and cutting.

C. The minimum physical properties will be as follows:

1. Tensile strength- 60,000 pounds per square inch.

2. Yield strength- 42,000 pounds per square inch.

3. 2-Inch Elongation.-10%.

D. In addition to the standard required tests, the following requirements must be met: Keel Block Tests as detailed in ASTM A536-Standard 0.50-inch diameter tensile test bars must be machined from keel block coupons cast from each heat and of the same hardness range as the special castings. Minimum test requirements are as specified above.

PART 3 - EXECUTION

3.1 GENERAL

A. Install all joint anchorage in accordance with the requirements of Section 33 11 13-Ductile Iron Pipe and Fittings. Install all joint anchorage for concrete pipe and fittings in accordance with manufacturer's installation instructions unless directed otherwise by the Commissioner.

3.2 DUCTILE IRON PIPE

A. All fittings and conditions, which result in tangential forces on the piping, must be provided with thrust restraints, unless otherwise specified or approved by the Commissioner.

3.3 CONCRETE PIPE

A. Whenever the harnessing of pipe joints by itself does not provide sufficient thrust restraint, the Contractor must provide additional thrust restraint as required. The Contractor must provide anchorage against thrust for water mains and appurtenances wherever the deflection of the pipeline exceeds six (6) degrees. The anchorage must be accomplished by placing concrete thrust blocks adjacent to the fittings to be anchored. All anchorage must be designed to withstand working pressure plus surge pressure. The Contractor must submit to the Commissioner complete design calculations and plans for all thrust restraints bearing the seal of a Professional Engineer licensed in the State of Illinois.

END OF SECTION 33 11 15

SECTION 33 12 16

WATER MAIN CONTROL VALVES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes requirements for the installation of gate valves, resilient wedge valves, and butterfly valves.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

A. Section 33 13 00 - Disinfection and Testing of Water Mains.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. ASTM A48 - Gray Iron Castings.
2 ASTM A126 - Gray Iron Castings for Valves, Flanges.
3. ASTM A436 - Austenitic Gray Iron Castings.
4. ASTM A439 - Austenitic Ductile Iron Castings.
5. ASTM B584 - Copper Alloy Sand Castings for General Application.

B. AWWA C110 - Ductile Iron and Gray Iron Fittings, latest edition.

C. AWWA C111 - Rubber Gasket Joints for Ductile Iron, latest edition.

D. AWWA C500 - Metal-seated Gate Valves for Water Supply Service, latest edition.

E. AWWA C504 - Rubber Seated Butterfly Valves, latest edition.

F. AWWA C509 - Resilient Seated Gate Valves, latest edition.

G. AWWA C550 - Standard for Protective Epoxy Interior Coatings for Valves and Hydrants, latest edition.

H. Federal Specification FF-B-575C - Bolts; Hex and Square, latest edition.

I. Federal Specification FF-N-836E - Nut; Square, Hex, Cap, latest edition.

1.4 SUBMITTALS

A. Contractor must provide an affidavit stating that all Butterfly Valves, valve operators, and torque overload protectors comply with all applicable provisions shown on the drawings and as specified in this specification.

B. Provide manufactures catalog cuts and/or certified drawings of all valves, valve operators, and torque overload protectors to be furnished. The manufactures catalog cuts and/or certified drawings must provide all necessary information regarding dimensions and materials used and conformance to requirements stated in these specifications.

C. All submittals must be reviewed and approved by the Commissioner prior to installation.

1.5 QUALITY ASSURANCE

A. Each valve must be hydrostatically tested at the manufacturer's shops and proven hydraulically tight at all pressures up to 200-pounds per square inch.

B. For gate valves, the following tests are required:

1. The first test consists of applying a 200-pound per square inch hydrostatic pressure between the discs through an opening in the bonnet casting.

2. The second test consists of applying a 200-pound per square inch hydrostatic pressure against the outside of each disc in the manner prescribed below:

a. The valves must be plugged or capped on both ends. The caps or plugs must be drilled and tapped to accept the pressure test piping.

b. With the pressure test piping in place, open the gates of the valve, the test-piping valve, and remove the plug in the bonnet. Fill the valve with water. When a discharge occurs at the outlet side, close the water supply line and insert the bonnet plug.

c. Close the gates of the valves, open test-piping valve, and apply a 200-pound per square inch hydrostatic pressure on the inlet side.

d. Hold test pressure for one (1) minute. During this time no water should discharge from the outlet end of the test piping. If no leak occurs, release pressure, reverse the test piping, and repeat the test procedures for the other gate.

If a leak occurs, repair and/or replace the valve as directed by the Commissioner. Repeat the test procedures.

3. An affidavit must be furnished from the manufacturer to attest to the fact that each of the valves furnished under this Contract were proven hydrostatically tight in accordance with the specified test procedures.

C. Valves that do not meet the requirements of this Section will be rejected and removed by the Contractor, and replaced with valves that conform to this Section, within the time period allowed by the Commissioner. Gate valve removal and replacement will be considered incidental to the installation of the valves and no additional payment will be allowed.

D. **The Work performed for installing valves must be performed by a plumber licensed in the State of Illinois or the City. The Work may include, but not be limited to, setting the valve; cutting and joining all pipe; installing test taps, fittings, adapters, joint gaskets, and continuity wedges; and tightening all gland nuts and bolts, as applicable for the installation.**

PART 2 - PRODUCTS

2.1 GATE VALVES

A. All gate valves are to be Chicago Standard Gate Valves of the size shown on the drawings that are designed, manufactured, tested, and inspected in accordance with AWWA C500, and in accordance with the exceptions noted here. All valves are to be delivered fully assembled.

B. The following characters must be cast in ½-inch letters on the bonnet of each valve:
- Chicago
- Year of Manufacture
- Manufacture's Name

C. Gate valves must be of mechanical joint type double disk and in the following sizes: 4-Inch, 6-Inch, 8-Inch, 12-Inch, and 16-Inch. Larger size valves must be of a butterfly style.

D. Material used must meet the requirements as to physical and chemical properties, as specified in this Section.

E. Valves found to contain defects such as blowholes, shrinkage or slag holes, cold shuts, or cracks will be rejected.

F. The thickness of metal in castings, whose standard thickness is less than 0.8-Inch, must not be more than 0.08-inch less than the standard thickness. The deficiency in thickness of castings, whose standard thickness is 0.8-inch or more, must not exceed 10% of the standard thickness. The above allowable deficiencies in thickness, however, must not extend over more than one-half of the area of the casting.

G. After being cleaned and tested, every assembled valve and all metallic parts must be coated inside and outside with coal tar pitch varnish. It must produce a smooth and non-tacky coating tough and tenacious when cold and not brittle nor with any tendency to scale off.

H. The brass castings must comply with ASTM B584, Copper Alloy UNS No. C83600.

I. The bronze in the valve stem and in the stem nut must be manganese bronze, complying with ASTM B584, Copper Alloy UNS No. C86700. Stem seals are to be double o-rings complying with ASTM D2000 and ASTM 568A

J. The gaskets used between the flanges must be fully faced, 1/32-inch thick and made of heavy-duty, asbestos-free, fiber composition, suitable for water service.

K. Bolts and nuts must be made of cast iron or steel. Heads of seal plate bolts must conform to the dimensions shown on the Drawings (an alternate of hex or square head bolt is acceptable) while all other requirements of seal plate bolts must conform to Federal Specification FF-B-575C and nuts must conform to FF-N-836E. Heads of bolts must be unfinished and nuts must be semi-finished. Both bolts and nuts must be hot dipped galvanized as specified in the applicable Federal Specification.

L. The valves herein specified must be furnished complete with mechanical joint accessories. The mechanical joint accessories must consist of mechanical joint thrust restraint glands, rubber gaskets, and tee head bolts and hex nuts, all conforming to AWWA C110. Dimensions and tolerances for mechanical joints must conform to table 1of AWWA C110.

M. It will be the manufacturer's responsibility to provide the patterns and ga necessary to perform the work to be done hereunder. The Departmer not furnish these items.

N. The Department reserves the right to make at any time such tests as it may deem proper to determine that the materials used are proper for the Work and that the valves are of good mechanical construction. The manufacturer must give the authorized inspectors of the Department free access to all places where valves are being made. At the Department's request, the manufacturer must furnish properly prepared standard test specimens of the materials used and must provide facilities for testing them.

O. All valves must open by turning the operating stem clockwise.

P. Operating nuts must be 2 ½-Inches square at the base of the nut.

2.2 RESILIENT SEATED WEDGE GATE VALVES

A. The Contractor must furnish and install resilient-seated gate valves that are designed, manufactured, tested, and inspected in accordance with AWWA C509, with following exceptions, deletions, or additions:

1. Exceptions for Section 4.4.7. Valves are to be supplied with 2 ½-inch square operating stem wrench nuts.
2. Exception for Section 4.4.7.2. All valves must open by turning the operating stem clockwise as viewed from top of the valve.

B. Resilient seated wedge gate valves must be of the mechanical joint type supplied complete with joint thrust restraint glands, vulcanized natural or synthetic rubber gaskets, and tee head bolts and hex nuts, all conforming to AWWA C110. Dimensions and tolerances for mechanical joints must conform to Table 1of AWWA C110.

C. All valves must provide an unobstructed waterway of full size when open. Gates or stems must not extend into the waterway. Valves are to be supplied in sizes between 4 and 12-Inches as noted on the drawings.

1. The bronze in the valve stem and in the stem nut must be manganese bronze, complying with ASTM B584, Copper Alloy UNS No. C86700. Stem seals are to be double o-rings complying with ASTM D2000 and ASTM 568A.
2. After being cleaned and tested, every assembled valve and all metallic parts must be coated inside and outside with coal tar pitch varnish. It must produce a smooth and non-tacky coating tough and tenacious when cold and not brittle nor with any tendency to scale off.

2.3 BUTTERFLY VALVES

A. Butterfly valves, as specified here, must be designed, manufactured, tested, and inspected in accordance with AWWA C504, Class 150Band with the requirements of this Section as listed hereafter:

1. Body Type: Short bodied mechanical joint, as specified.
2. Maximum Non-shock Shut-off Pressure: 100psi.
3. All valves must have flow through discs.
4. Each valve furnished must be subjected to the performance, leakage and hydrostatic tests described in Section 5.2 of AWWA C504.
5. A minimum of two (2) weeks prior to the test dates, the manufacturer must notify the Commissioner in writing when the shop testing of the valve will occur. Failure to notify the Commissioner will not be grounds for rejection.
6. The manufacturer must submit to the Commissioner records of all tests performed under Sections 2.3, 3.8.5, and 5.2 of AWWA C504.
7. Shaft seals must be either split V type packing or "0" ring seals. Shaft seals consisting of a stuffing box with pull down packing are not acceptable.
8. The shaft seal area must not be exposed to the environment. Should the valve design utilize an open packing bonnet area, that area must be enclosed with a 304 series type 18-8 stainless steel, minimum 1/4-Inch thick removable shroud. The shroud must be fully sealed and rated for buried service. An access cover must be provided on the shroud with a minimum opening of 6-Inches x 8-Inches.
9. The valve shaft must be 304 or 316 stainless steel.
10. The valve body must be made of cast iron conforming to ASTM A126, Class B or ASTM A48, Class 40 alloy cast iron ASTM A436, Type 1 and 2 or ASTM A439, type D2 with maximum of 0.003% lead. The valve disc must be ductile iron conforming to ASTM A536, and it must have a seating edge of 304 or 316 stainless steel. The seating edge may be installed in the valve body if the rubber seat is applied to the valve disc. The valve seats for 24-inch and larger butterfly valves must be capable of adjustment or replacement at the installation site.
11. Valve discs must be secured to shafts by means of solid, smooth-sided stainless steel or monel taper pins or dowel pins having a circular cross section. Each taper pin or dowel pin must be extended through the shaft and mechanically secured in place. The use of bolts, setscrews, knurled or fluted dowel pins, flat sided taper pins, expansion pins, roll pins, tension pins, spring pins, or other devices in lieu of the pins specified herein will not be acceptable.

12. The valves and valve operators must be rated for buried service, except electric actuators.
13. Valve operators must conform to AWWA C504 for Class 150B. Manual operators must be Limitorque worm gear, self-locking type designed to hold the valve in any intermediate position without creeping or fluttering. Operators must be equipped with torque overload protection to prevent over travel of the disc in the open and closed position. Spur gear must be furnished with an operator to increase the number of turns and reduce operating torque. A separate limit stop device must also be installed in accordance with "Torque Overload Protection", described below. Operators must provide position indication on the housing of the operator. Valves must open with a clockwise rotation of the nut. The valve and valve operator must be rated for bi-directional flow.
14. Valve operators must be equipped with a Chicago standard style hub nut. The hub nut must be attached to the input shaft of the operator by means of a shear pin. The shear pin must be sized such that it fails when 350 foot-pounds of input torque is applied to the hub nut. Three (3) additional shear pins must be furnished as replacement part for each valve ordered.
15. Corrosion resistant nameplates, as described in Section 6.1 of AWWA C504, must be permanently attached to both the valve and valve operator. There must be two (2) valve nameplates. One must be affixed to the valve body and the other must be affixed to the valve operator in a prominent location. In addition to the normal valve data, the plate must also include the number of turns required to operate the valve and the direction to open (clockwise to open). There must be one (1) operator nameplate affixed to the valve operator. The minimum number of turns to close the valve must be no less than 2 turns per inch (5 turns per centimeter) of valve size in order to minimize water hammer.
16. The manufacturer must provide all nuts, bolts, gaskets, and glands required to make connections.

B. Torque Overload Protection

1. Contractor must furnish torque overload protection devices. The device must be installed on top of the Chicago standard hub nut on butterfly valve operators and in conformance to the following requirements.
2. Purpose: The over torque protector must prevent butterfly valve and operator from damage due to excessive operating torque.

3. Operation: The device must transmit applied torque in either direction only up to a preset amount and automatically disengage if greater torque is applied. It must automatically reset if the applied torque is below the preset amount.

4. Description: The device must be of overall rugged and of durable construction suitable for long-term reliable operation and suitable for buried service.
5. The upper end must have an integral 2 ½-Inch square operating nut and the lower end must have a matching socket. The socket must have one (1) 2-Inch square head set screw in each of two (2) adjacent faces.
6. The operating mechanism must employ spring-loaded tapered rollers engaged in matching tapered detents. A ball bearing type design will not be accepted.
7. The manufacturer's identification must be cast in 3/8-inch or larger letters on an upper surface.
8. Corrosion Protection and Lubrication: The entire housing must be coated inside and outside with two-part epoxy. The outside must have a topcoat of two-part polyurethane similar in color to U.S. Paint #G9337 "Sun Yellow".
9. The operating mechanism must be permanently lubricated and sealed to withstand 50-feet of water head.
10. There must be no water-retaining external cavities.
11. Service Life: The device must have a minimum life of one-thousand (1000) trips from rated capacity.
12. Trip Torque Set Point: The device must be factory set to trip at 200 foot-pounds of applied torque.
13. Trip Torque Adjustment: Trip torque must be adjustable from 10% to 100% of rated capacity without dissembling the unit. The adjustment means must be sealed and concealed to prevent tampering.

2.4 QUARTER TURN AWWA ELECTRIC VALVE ACTUATORS (OPEN-CLOSE SERVICE)

A. When shown on the Plans, specified, or as directed by the Commissioner, the Contractor must furnish electric valve actuators in conformance with the following requirements.
   1. The electric valve actuator must include the motor, actuator unit gearing, position limit switches, torque switches, declutch lever, and hand wheel, as self-contained unit. The actuator must meet the latest revision of the applicable AWWA specification. The actuator must be of sufficient capacity to operate the attached butterfly valve in a modulating action against 100-pounds per square inch pressure.
   2. The motor must be rated for continuous duty, specifically designed for valve actuator service, and must be of high starting torque, totally enclosed, non-ventilated construction. Motor insulation must be a minimum NEMA Class F, with a maximum continuous temperature rating of 311º Farenheit (rise plus ambient) for the duty cycle specified. Provide optional insulation classes where specified or where service conditions warrant.

3. The motor must be of sufficient size to open or close the valve at the maximum torque. The motor must be capable of operating at plus or minus 10% of specified voltage. The motor duty rating must be sufficient for one (1) complete cycle (open-close-open, or reverse) without exceeding its temperature rating. Motor bearings must be of the anti-friction type, and permanently lubricated.
4. The motor must be an independent sub-assembly such that the power gearing must not be an integral part of the motor assembly, to allow for motor or gear changes dictated by system operation changes. The motor must be equipped with internal thermal contact, to protect against motor overload, and 120-volt heaters. The motor must be designed to operate on 230/460 VAC.
5. The actuator must be a multiple reduction unit with power gearing consisting of spur or helical and worm gearing. There must be a self-locking worm gear set in the drive train to maintain valve position. The spur or helical gearing and worm gear must be of hardened alloy steel, and the worm gear must be alloy bronze. All power gearing must be accurately cut; non-metallic, aluminum, or cast gearing must not be allowed. Anti-friction bearings with caged balls or rollers must be used throughout.
6. All rotating power train components must be immersed in grease with provisions for inspection and re-lubrication without disassembly. Lubricants must be suitable for ambient conditions between 20º F and 150º F. Adequate seals must be provided on all shafting.
7. The actuator must have a built-in device, which allows the motor to reach full speed before engaging the valve load when required by unseating applications.

8. A metallic hand wheel must be provided for manual operation, with an arrow to indicate "open" rotation. The hand wheel must not rotate during motor operation. A fused motor must not prevent manual operation. When in manual operating mode, the actuator must remain in this mode until the motor is energized, at which time the actuator will automatically return to electric operation. Changing from motor operation to manual operation must be accomplished by a positive, padlockable declutching lever, which mechanically disengages the motor and related gearing. It must be impossible for simultaneous manual and motor operation to occur. Friction type declutching mechanisms are not acceptable.

9. Position limit switches and associated gearing must be an integral part of the valve actuator. Limit switch gearing must be of the intermittent type, made of bronze or stainless steel, lubricated, and totally enclosed to prevent dirt and foreign matter from entering the gear train. Limit switch contacts must be heavy duty and silver-plated with wiping action. Where specified, the actuator must have sixteen (16) contacts, four (4) contact/four (4) rotor types, all of the same basic design. As an alternative, a limit switch assembly may be directly coupled to the valve stem, eliminating the need for intermittent gearing, and eight (8) single pole, double throw (SPDT) or eight (8) double pole, double throw, (DPDT) contacts. Contacts must be convertible from normally open, to normally closed, or reverse.
10. Switches must be adjustable, allowing for trip points from fully open to fully closed positions of valve travel. They must not be subject to breakage or slippage due to over-travel.
11. Switch design must permit visible verification of switch position without disassembly.
12. Each valve actuator must be equipped with a switch that will interrupt the control circuit in both the opening and closing directions when valve torque overload occurs. Contacts must be silver-plated. The torque switch must have graduated dials for both open and close directions of travel, and each must be independently adjustable. The torque switch must include a positive means to limit adjustability so as not to exceed the actuator output torque capability. The activating spring back must be of the Belleville spring design.
13. The position limit switch and torque switch contact must be rated 600 volts per NEMA standard ICS 2-125, heavy duty.

14. The control compartment must be provided with a 120-volt space heater.

15. The valve and operator must be aligned in such a manner that when installed, the manual hand wheel is in a horizontal plane.
16. The operating time must be two (2) minutes for 90 º- valve travels.

PART 3 - EXECUTION

3.1 FIELD TESTING

A. All valves will be tested as specified in Section 33 13 00 - Disinfection and Testing of Water Mains.

3.2 SETTING OF VALVES

A. Valves must be carefully installed in their proper positions, free from all distortion and strain, with mechanical or flanged joints, and must be packed and left in satisfactory operating condition.

3.3 SETTING OF VALVE BOXES

A. Valve boxes must be installed where shown on the drawings, or where ordered by the Commissioner, and must be set vertical and concentric with the valve box. Any valve box which has been moved from its original position by direct or indirect actions of the Contractor, so as to prevent the operation of the valve key extension, must be reset and/or replaced as applicable, by the Contractor. This work will be considered incidental to the construction and not considered for additional payment. Any valve key extension or stem, which has been damaged so that it is inoperable, must also be replaced, and will also be considered incidental to the construction and no additional payment will be allowed.

END OF SECTION 33 12 16

SECTION 33 12 17

WATER MAIN TAPPING CONNECTIONS AND VALVES

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes the requirements for tapping iron and concrete water mains while maintaining the water main under line pressure without disrupting service to customers as shown on the drawings and specified here.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

A. Section 03 30 00 – Cast-In-Place Concrete.
B. Section 33 11 13 – Ductile Iron Water Main Pipe and Fittings.

1.3 REFERENCES

A. ANSI A21.11 - Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings, latest edition.
B. ASME/ANSI B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, latest edition.
C. American Society for Testing and Materials (ASTM), latest edition:
   1. ASTM A126 - Gray Iron Castings for Valves.
   2. ASTM A240 - Stainless Steel for Pressure Vessels.
   3. ASTM A242 - High Strength - Low Alloy Structural Steel.
   4. ASTM A285 - Carbon Steel for Pressure Vessels.
   5. ASTM A351 - Castings for Pressure Containing Parts.
   6. ASTM A536 - Ductile Iron Castings.
D. AWWA C213 - Fusion Bonded Epoxy Coatings, latest edition. E.
AWWA C500 - Gate Valves for Water Supply, latest edition.
F. ANSI/AWWA-C110/A21.0 - Ductile Iron Flanged Fittings, latest edition.
G. MSS-SP60 - Connecting Flange Joint Between Tapping Sleeve and Valve, latest edition.

1.4 SUBMITTALS

A. Refer to Book I for submittal requirements and procedures for Shop Drawings, Product Data, Records and Samples.

B. Provide an affidavit stating that tapping valves, tapping sleeves, and all appurtenances comply with all applicable provisions of the Drawings and the Specifications.

C. Provide manufacturer certified drawings (in triplicate) of the valves and sleeves that are proposed for the installation. The drawings must provide all necessary information regarding dimensions and materials used, including the tapping machine.

1.5 QUALITY CONTROL

A. The City reserves the right to make at any time such tests as it may deem proper to determine that the materials used are proper for the Work and that the sleeve and valve are of good mechanical construction. The manufacturer must provide authorized inspectors of the City free access to all places where sleeves and valves are being manufactured, furnish standard test specimens of materials specified for use, and access to testing facilities for testing material samples.

B. The Work necessary for direct tapping of iron or concrete pipe must be performed by a plumber licensed in the State of Illinois or the City. This Work may include, but not be limited to, the installation of tapping machinery and tapping of the pipe; the installation of tapping sleeves and taps; the installation of joint gaskets; the tightening of all gland nuts and bolts; and the tightening of continuity bolts, as applicable for the installation.

PART 2 - PRODUCTS

2.1 GENERAL

A. The tapping connection and valve must provide a branch connection at right angles to the existing water main being tapped without shutting down the main.

2.2 TAPS 12-INCH X 12-INCH AND SMALLER

A. The tapping connection must be the split sleeve, all stainless steel, full gasket type featuring low profile lugs with separate, replaceable bolts for assembly. All welds must be fully passivated to restore the original high corrosion resistance and appearance of the stainless steel. The sleeve sections must be connected with nuts and bolts, and must be designed to fit iron water pipe of the sizes as determined by field inspections. The inside diameter of the branch connection must be of full size so as to allow the free passage of a standard cutter.

B. The branch outlet of the sleeves (connection) must be either CF8 stainless steel per ASTM A351, type 304 stainless steel per ASTM A240, 125-pounds drilling per ANSI B16.1, recessed for tapping valve per MSS-SP60, bonded flanged gasket.

C. All bolts and nuts must be type 304 stainless steel. Bolts must be separate, self-aligning, and replaceable. Nuts must be impregnated with anti-glaring lubricant. Integral bolts welded to the sleeve are not permitted.

D. The side flange gaskets for bolted sleeves to be furnished with each connection must be made of vulcanized natural or synthetic rubber.

E. The body of each connection must be stenciled with a range of pipe diameters that the connection will fit and also the diameter of the branch.

F. All sleeves must be designed for 150-pounds per square inch pressure rating.

2.3 TAPS LARGER THAN 12-INCH X 12-INCH

A. This tapping connection must be of the split sleeve, cast or ductile iron, mechanical joint end type, or the fabricated steel type with epoxy coating and stainless steel nuts and bolts. Sleeves must be sized to compensate for a normal amount of oversize and out-of-roundness in the pipe. In the mechanical joint type, the use of two (2) gaskets of different cross-sections to accomplish this will be acceptable. Supply all necessary mechanical joint accessories. The sleeve sections must be connected by means of bolts and nuts and must be designed to fit iron water pipe of the sizes as determined by field inspections.

B. The sleeve must be designed to fit Class "B" water pipe. The inside diameter of the branch connection must be full size so as to allow the free passage of standard cutters.

C. Sleeve Body

1. Mechanical joint type: must be gray cast iron conforming to ASTM A126 Class "B" or ductile iron conforming to ASTM A536.

2. Fabricated Steel type: Must be steel conforming to ASTM A285 Grade "C". A 10-mil minimum thickness of fusion-applied epoxy must coat the body. This epoxy coating must meet the requirements of AWWA C213.

D. The branch outlet of the sleeves must be flanged, 125-pound drilling per ASME/ANSI B16.1, and recessed for tapping valve as per MSS-SP60.

E. Bolts and Nuts

1. Mechanical joint type: High strength, low alloy steel conforming to ASTM A242 or stainless steel of the type 300 series Austenitic.
2. Fabricated steel type: Stainless steel 18-8 type 304.

F. All bolts must be separate, self-aligning, and replaceable. Stainless steel nuts must be impregnated with anti-galling lubricant.

G. Gaskets

1. Mechanical joint types: Side flange gaskets must be furnished with each connection.

2. Fabricated steel type: A minimum 7/8-Inch wide, recessed, BUNA-N gasket around the outlet.

H. The tapping sleeve must have a 3/4-Inch diameter bronze NPT test plug located in the branch outlet.

I. The body of the tapping sleeve must be stenciled with the range of pipe diameters the sleeve will fit and also the diameter of the branch.

J. All sleeves must be designated for 150-pounds per square inch pressure rating.

2.4 TAPPING VALVES

A. The valves must be double-disc gate valves of a standard design and must open by turning in a clockwise direction.

B. Valves are subject to approval by the Commissioner and must conform to AWWA C500 for valves of sufficient strength to withstand 150-pounds working pressure. Body ring lugs must be cut out leaving an oversized circular waterway suitable for use with a standard sized cutter head.

C. Valves must have flange inlet by mechanical joint outlet. Furnish all accessories required for completing connections at both ends of the valve. The companion flange for the mechanical joint outlet must be designed to accept standard tapping machines.

D. Valve operating nuts must be 2 ½ -Inches square at the base of the nut.

E. The valve stem must show an ultimate tensile strength of not less than 60,000-pounds per square inch and a minimum elongation of 15% in 2-Inches.

F. The castings must be of gray iron conforming to ASTM A126 Class “B” and must be free from defects such as blow holes, blisters; cold shuts, cracks, etc. Castings must be true pattern, boldly filleted at angles, and free from flaws. Castings must not be filled or plugged in any manner.

G. All iron castings must be coated with petroleum asphaltic material and must be given two (2) coats outside and one (1) coat inside. All surfaces to be painted must be free from all rust, residues, and debris and must be in proper, dry condition immediately prior to paint application.

H. The diameter of the castings must not vary from the diameter given on the drawings by more than 0.08-Inch for castings 16-Inches or less in diameter,
0.10-Inch for 20-Inch and 24-Inch castings; 0.13-Inch for 30-Inch, 36-Inch, and 42-Inch castings; and 0.16-Inch for 48-Inch castings.

I. Tapping connections and valves found on inspection to contain defects, such as blowholes, shrinkage, slag holes, cold shuts, cracks, etc., will be rejected, removed from the Work area and replaced with tapping connections and valves that conform to this Section. This process will be considered incidental to the construction of the tapping connections and valves and no additional payment will be allowed.

J. Designs of sleeves to be utilized for use in tapping concrete pipe must be submitted for approval by the Commissioner for the particular pipe and circumstance for which they will be utilized.

2.5 FLANGES AND BOLTS

A. Provide flanged fitting on tapping saddle and provide Ductile Iron Blind Flange meeting ANSI/AWWA-C110/A21.0. Conform to Section 33 11 13 – Ductile Iron Pipe and Fittings. Class 125 rated for 250 psig working pressure.

B. Provide gaskets bolts, nuts and washers as required meeting requirements of Section 33 11 13 – Ductile Iron Pipe and Fittings

2.6 CONCRETE ENCASEMENT

A. Provide concrete encasement as noted on the Plans as specified in Section 03 30 00 – Cast-In-Place Concrete. Concrete for encasement of water main and appurtenances must NOT INCLUDE FLY ASH IN THE MIX.

PART 3 - EXECUTION

3.1 TAPPING REINFORCED CONCRETE CYLINDER PIPE

A. Prior to tapping PCCP (Prestressed Concrete Cylinder Pipe) Mains in this work, coordinate with CDWM for isolation of each pipe section from system pressure using existing system isolation valves. Contractor may relieve pressure of isolated pipe section prior to tapping.

B. Coordinate with DWM details.

C. Tap reinforced concrete cylinder pipe to provide flanged outlets as follows:

1. Wire rubber gaskets (part #4, Detail 5-1) under edges of saddle (part #2, Detail 5-1). Assemble saddle on concrete cylinder pipe (part #1, Detail 5-1) with U-bolts (part #3, Detail 5-1). Draw up saddle lightly against gaskets to seal space between saddle and pipe.

2. Pour mortar grout into space between saddle plate and pipe through grout holes (part #5, Detail 5-1). After grout between saddle and pipe has taken its initial set, tighten saddle firmly against grout. Cut circumferential steel wires (part #7, Detail 5-1) or rods away from outside of cylinder, even with edge of hole in saddle.

3. If area of cylinder to be tapped includes a longitudinal seam, carefully file weld down to sheet metal and fill recess with hot or cold solder.

4. For outlets larger than 12-Inches attach concrete lining of pipe to steel cylinder.

5. Place rubber gland gasket (part #8, Detail 5-1) into groove of gland (part #9, Detail 5-1). Insert gland through hole in saddle. Using studs and nuts (part #10, Detail 5-1) pull gland toward the cylinder, compressing the gasket to make a watertight seal.

6. Place special blind flange on gland flange.

7. Fill outlet with water and apply pressure to check tightness of gland gasket. Remove blind flange.

8. For outlets with diameters 12-Inches and larger, wire form around outside of gland flange and saddle flange and pour mortar grout into space between flanges and between necks of saddle and gland. Allow mortar to set-up before cutting. For outlets with diameters less than 12-Inches, this operation can be done after completing the cut.

9. Fill recess between inner end of gland and surface of cylinder with neat cement or mortar.

10. Attach tapping valve and tapping machine equipped with pilot drill and carbide tipped cutter. Drill and cut through cylinder and concrete pipe core. Retract drill and cutter, close valve, and remove tapping machine.

11. Encase all buried metal parts (saddle and U-Bolts) in 1:3 concrete or mortar mix with a minimum cover of 3 inches.

12. After placing the saddle and removing the outside concrete and circumferential reinforcement to expose the section of the core through which the tap is to be made, toggle bolts and stiffening ribs are installed under pressure.

13. Insert the toggle bolts, under pressure, as follows:

    Mount frame, shown as part #1, Detail 5-2 on the details, firmly on the flange of the saddle. A gland (part #2, Detail 5-2) with a corporation stop (part #3, Detail 5-2) attached and jacking bolts (part #4, Detail 5-2) are then mounted between the frame and the exposed steel cylinder. Jack the bolts against the frame to compress a rubber gasket between the gland and the steel cylinder and to hold the gland and corporation cock firmly in place. A standard drilling machine is then mounted on the corporation stop. With the corporation stop open, the drill is advanced through the stop and gland and a hole is then drilled through the steel and concrete core. After retracting the drill, the corporation is closed and the drilling machine removed.

14. A toggle inserting machine, part #5, Detail 5-2 on the details, is then mounted on the corporation stop with a specially designed toggle bolt in place in the machine. A detailed sketch of the toggle bolt is shown on the details. The machine is designed so that it will push the toggle bolt through the corporation stop, gland and core, pull it back engaging the toggles against the inner surface of the pipe and rotate the bolt so that it firmly tightens and holds the concrete core to the steel cylinder.

    Referring to Appendix A showing the details of the toggle bolt, and Appendix A, it will be noted that a conically shaped rubber stopper achieves the seal. The tightness of this seal is checked by a small cock attached to the gland, (part #6, Detail 5-2) on the details. Water stops coming out of the open cock when the seal is achieved. The conical pilot nut shown on the details helps center the toggle so that it will not "hang up" going through the hole in the core. The specially designed head of the toggle bolt allows it to be pushed, pulled, rotated, and released after the toggle bolt is tightened in place. Two (2) toggle bolts can be installed at each frame setting. As many toggle bolts can be placed as appear necessary to hold the concrete core. Two (2) have been found sufficient in 14-Inch, 20- Inch, 24-Inch, and 30-Inch taps; four (4) in 16-Inch taps.

15. After completing the installation of the toggle bolts, the stiffening ribs are installed. The ribs (part #7, Detail 5-3) are circumferentially apposed as shown on the top view on the details. Each rib assembly consists of two (2) curved steel bars held parallel by one (1) or more welded steel cross members and they are curved to a radius-less than that of the outside of the cylinder so that they contact the cylinder only at their ends. Each rib is placed so that the two curved bars straddle a pair of toggle bolts, and two (2) screws (part #9, Detail 5-3) on the details, passing through the clamp plates (part #8, Detail 5-3) into holes threaded in the heads of the toggle bolts, hold the ribs tight to the cylinder.

D. The intent of the toggle bolts is to tie the concrete lining or sections of the concrete, if there is any cracking, to the cylinder so that the concrete portion of the core will be retracted with the steel cylinder portion of the core.

3.2 TAPPING IRON PIPE

A. Excavate and expose all iron pipes to be tapped and measure the outside diameter prior to ordering the taps. Install tapping connections per manufacturer's instructions.

END OF SECTION 33 12 17

SECTION 33 12 19

FIRE HYDRANTS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes requirements for supplying materials for and the installation of fire hydrants, as shown on the drawings and specified here.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. ASTM A108 - Standard Quality Carbon Steel Bars.
2. ASTM A126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
3. ASTM A153 - Hot Dip Zinc Coating for Iron and Steel Hardware.
4. ASTM A307 - Carbon Steel Bolts and Studs.
5. ASTM A536 - Ductile Iron Castings.
6. ASTM B62 - Composition Bronze or Ounce Metal Castings.
7. ASTM B584 - Copper Alloy Sand Castings.
8. ASTM B633 - Electrodeposited Zinc Coatings on Iron and Steel.
9. ASTM C700 - Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.
10. ASTM D395 - Test Methods for Rubber Property Compression Set.
11. ASTM D412 - Test Methods for Rubber and Elastomers.
12. ASTM D2000 - Classification of Rubber Products in Automotive Applications.
13. ASTM D2240 - Durometer Test for Rubber Hardness.

B. AWWA C502 - Dry Barrel Fire Hydrants, latest edition.

C. Federal Specification FF-B-575C - Bolts; Hexagon and Square, latest edition.

D. Federal Specification RR-C 271D - Chains and Attachments, latest edition.

1.3 SUBMITTALS

A. Provide an affidavit from the manufacturer to attest to the fact that all hydrants furnished under this Contract were tested and proven hydrostatically tight and mechanically sound in accordance with the specified test procedures.

1.4 QUALITY ASSURANCE

A. After each hydrant is completely assembled, it must be mechanically and hydrostatically tested in conformance with AWWA C502, Sec 5.1.

B. The Work performed for the hydrant installation must be performed by a plumber licensed in the State of Illinois or the City. The Work may include, but not be limited to, setting hydrants; joining all pipe, fittings, and valves; installation of joint gaskets and continuity wedges; and tightening of all gland nuts and bolts, as applicable for the installation.

PART 2 - PRODUCTS

2.1 GENERAL

A. The hydrants must be of the City of Chicago standard design with mechanical joint bottom. The completed hydrants must be delivered finished, painted, and fully assembled.

2.2 FIRE HYDRANTS

A. The standpipe must include the manufacturer's name, year of manufacturing, and the letters "C.W.W." in letters 1-Inch high. This lettering must be positioned approximately 1 foot below the top flange.

B. Materials from which the various parts of the hydrants are constructed must be of the kind designated on the details. Each kind of material used must meet the requirements as to physical and chemical properties hereafter specified. Test bars required to established quality grade or strength under the ASTM standards must be made and machined by the manufacturer as part of the work.

C. 3/4-Inch x 2-3/4-Inch unfinished hex head machine bolts and 3/4-Inch American Standard regular hot press hex nuts must conform to Federal Specification FF-B-575C, Class B Steel, Class 1 fit or, hex head bolts and hex nuts must conform to ASTM A307 Grade A. All nuts and bolts to be hot dipped galvanized conforming to ASTM A153 or must be coated by the rust proof electrozinc process ASTM B633, Type G.S., or SS Type 18-8SS, ANSI Type 302, 303, or 304.

D. Iron castings must conform to ASTM A126 Class B. The thickness of metal castings, whose standard thickness is less than 0.8-Inch, must not be more than 0.08-Inch less than the standard thickness. The deficiency in thickness of castings, whose standard thickness is 0.8-Inch or more, must not exceed 10% of the standard thickness. The above allowable deficiencies in thickness must not extend over more than one-half of the area of any casting. The diameter of the castings must not vary from the standard dimensions by more than 08-Inch.

E. All bronze castings, with the exception of the stem nut, stem screw, and valve seats must conform to ASTM B62 for Leaded Red Brass Copper Alloy UNS No. C83600. The valve seat must conform to ASTM B584 for Leaded Manganese Bronze, Copper Alloy UNS No. C86700. The stem nut and stem screw must conform to ASTM B584 for Silicon Brass, Copper Alloy UNS No. C87600 with the following mechanical properties:

1. Minimum Tensile Strength - 45,000-psi

2. Minimum Yield Strength - 25,000 psi

3. Minimum Elongation - 16% of length

4. Brinell Hardness - 110

F. The stem nut and stem screw must be stamped SI for identification purposes.

G. Wrench nuts made of ductile iron must be marked “D.I.” on the flange portion opposite the arrow indicating the direction of turn to open.

H. Ductile iron castings must comply with compositions and physical properties in accordance with ASTM A536 Grade 65-45-12.

I. The City will furnish neoprene-seating valves if requested by the Contractor. The Contractor’s charges for transporting the neoprene seating valves must be considered incidental to the construction and no additional payment will be allowed.

J. Full face gasket of suitable material, 1/16-inch thick, 8 ½-inches X 13 ½-inches, with eight (8) 7/8-inch diameter holes on an 11 3/4-inch bolt circle must be provided for the hydrant flange gaskets.

K. Steel hydrant chain must comply with Federal Specification RR-C-271D (1), Type II, Class 2, with an approximate weight of 25-pounds per 100 feet, and have a hot galvanized coating. This chain, approximately 26-Inches long, must be connected to hydrant cap hooks and fastened at its center to the hydrant by means of the ½-Inch X 1-Inch cap screw with chain angle and "S" hook of ½-Inch mild steel stock "S" hook and cap hooks which engage the chain, must be securely welded in the closed position or fastened in a suitable manner to hold the hooks securely in a closed position.

L. Where the Plans call for finish and drilling, all such work must accurately comply with the dimensions shown, so that all parts are interchangeable from one hydrant to another. It will be the manufacturer's responsibility to provide the patterns and gauges necessary to perform the work specified.

M. Where machining tolerances are not indicated on the drawings, the following must be used where applicable:

1. If dimension is in decimals, tolerance is ± 0.005-Inch.

2. If dimension is in inches, tolerance is ± 1/64-Inch.

N. Appropriate lubricant must be applied to threads on hydrant bottom, ½- Inch X 1-Inch cap screw and valve seat before assembly.

O. Operating stem must be of cold rolled steel, ASTM A108 Grade 1018. Stem must be coated, excluding bottom 3-7/8-Inch of the section below shoulder including threads, with a bituminous coating.

P. Rubber Gaskets must comply with ASTM D2000; Type SC-715B, as follows:

1. Shore A Durometer Hardness - 70 $\pm$ 5 ASTM D2240.

2. Tensile Strength - 1500-psi minimum ASTM D412.

3. Compression Set - 35% maximum ASTM D395.

Q. The City reserves the right to make at any time such tests as it may deem proper to determine that the materials used are proper for the work and that the hydrants are of good mechanical construction. The contractor must give the authorized inspectors of the City free access to all places where hydrants are being made. At the City's request the manufacturer must furnish properly prepared standard test specimens of the materials used and must provide facilities for testing them.

R. Fire Hydrants that do not meet the requirements of this Specification will be rejected and, when so ordered by the City, the Contractor must remove all inferior hydrants not meeting the Specification and replace rejected items within the time limits as specified. The removal and replacement of the hydrants will be considered incidental to the construction and no additional payment will be allowed.

2.3 PAINT

A. All ferrous metal parts of the hydrant, inside and outside, must be thoroughly cleaned before coating. Coatings used on interior surfaces of the hydrant that are in contact with potable water must be suitable for contact with drinking water. Prepare hydrant surfaces and apply paint in accordance with paint manufacturer's recommendations. Do not paint exposed hydrant nozzle threads or other useable threads.

B. Primer must be red oxide primer; acceptable products are W. C. Richards Metal primer #WRFA-13-127; or Benjamin Moore Universal Metal Primer # M07.

C. Top coat must be alkyd high-gloss enamel; acceptable produces are Benjamin Moore Impervo #C13320 (Brilliant Red), or Sherwin Williams Industrial Enamel Safety Red #617-4064.

D. Paint for color coding flange must be as follows:

1. White colored pigment; acceptable products are Seymour Stripe #16-652 Spray (White), Rustoleum High Performance Acrylic 5200 System (#5292 Gloss White), or Sherwin Williams PM 200 AES Pure White #5178-99993.

2. Yellow colored pigment; acceptable products are Benjamin Moore Impervo #C133 Alkyd High-Gloss Metal and Wood Enamel (Safety Yellow), or Sherwin Williams Industrial Enamel Safety Yellow #617-4072, #617-8000, or #617-50320.

3. Blue colored pigment: accept products are Seymour Stripe #16-653 Spray (Precaution Blue), or Rustoleum High Performance Acrylic 5200 System (#5225 Safety Blue), or equal.

E. Shop Coating of Fire Hydrants.

1. Exterior ferrous surfaces of the hydrant must be painted with a coat of primer to two feet below the top flange.

2. Exterior ferrous surfaces of the hydrant must be given a topcoat of alkyd high-gloss enamel to two feet below the top flange.

3. All exterior ferrous surfaces below the ground line not coated with primer and topcoat must be shop coated with two (2) coats of asphaltic coating, each a minimum of 1 mil thick. The first coat must be allowed to dry thoroughly before applying the second coat.

2.4 HYDRANT DRAIN

A. Hydrant drains must be constructed of 6-Inch diameter, extra strength, perforated clay pipe, conforming to ASTM C700, with mortared bell and spigot type joints.

PART 3 - EXECUTION

3.1 GENERAL

A. Install fire hydrants and hydrant drain with drainage bedding, and connect to hydrant drain outlet as detailed on the drawings.

B. Securely connect fire hydrant to the water main using mechanical joint thrust restraint glands or other restrained joint fittings as shown on the drawings.

C. Pressure test the fire hydrant installation with full line pressure to the fire hydrant without blocking behind the fire hydrant.

D. Hydrant leads must be 8-Inches in diameter, or as otherwise specified or shown on the Plans.

E. Spool pieces are not allowed for the vertical adjustment of hydrants. If a vertical adjustment is required due to the depth of the water main, an offset must be utilized prior to installing the hydrant.

3.2 COLOR CODING HYDRANT FLANGES

A. Contractor must color code the vertical edge of the hydrants top flange, (located approximately 6-Inches from the centerline of the nozzle cap), on all installed hydrants in accordance with the Department's "Color Code for Fire Hydrants".

END OF SECTION 33 12 19

SECTION 33 12 20

WATER MAIN VALVE BASINS & METER VAULTS

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes requirements for construction and/or adjustment of water main valve basins and meter vaults using precast concrete or masonry structures.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

A. Section 31 23 10 - Excavation, Trenching and Backfilling.
B. Section 03 20 00 – Concrete Reinforcing.
C. Section 03 30 00 – Cast-In-Place Concrete.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM), latest edition:

1. ASTM A48 - Standard Specification for Gray Iron Castings.
2. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete Reinforcement.
3. ASTM A197 - Standard Specification for Cupola Malleable Iron.
4. ASTM A536 - Standard Specification for Ductile Iron Castings.
5. ASTM A615 - Standard Specification for Deformed and Plain Billet- Steel Bars for Concrete Reinforcement.
6. ASTM C32 - Standard Specification for Sewer and Manhole Brick.
7. ASTM C55 - Standard Specification for Concrete Building Brick.
8. ASTM C139 - Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
9. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes Using Rubber Gaskets
10. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections
11. ASTM C857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures

12. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
13. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants.

B. IDOT Standard Specification for Road and Bridge Construction (SSRBC), latest edition.

C. American Association of State Highway Transportation Officials, Standard Specifications for Highway (AASHTO), latest edition.

1.4 SUBMITTALS

A. Refer to Book I for submittal requirements and procedures for Shop Drawings, Product Data, Records and Samples.

B. Shop Drawings: When not indicated on the Contract Drawings in sufficient detail or definition, submit detailed drawings of cast-in-place and precast concrete utility structures and related metal work.

C. Product Data: Submit manufacturers' product data for standard manufactured precast concrete sections and structures, for metal gratings and covers, and for other, related miscellaneous metal items.

D. Certification: Submit certification or other acceptable evidence that covers and grates to be provided for roadways and parking areas meet proof- testing requirements for AASHTO H2O traffic loading.

PART 2 - PRODUCTS

2.1 PRECAST CONCRETE STRUCTURES

A. Fabrication standards - Circular precast concrete base and riser sections furnished for manholes, valve basins and other structures must conform to ASTM C478. Non-circular precast concrete monolithic and sectional structures for meter vaults, riser manholes and other structures must conform to ASTM C858.

B. Furnish riser sections in various heights, including an offset tapered section, as detailed on the Drawings, or as directed by the Commissioner.

C. Precast reinforced concrete flat slab tops for manholes must conform to ASTM C857, and be designed to accommodate a minimum AASHTO loading of H 20, unless directed otherwise by the Commissioner.

2.2 JOINT SEALANTS

A. Rubber gaskets must conform to ASTM C443.

B. Preformed butyl rubber flexible rope type gaskets must conform to ASTM C990.

2.3 ADJUSTING RINGS

A. Adjusting rings are to be precast concrete in conformance with ASTM C478.

B. Mating Faces:

1. Smooth

2. Parallel

3. Free from cracks, chips, spalls or casting irregularities interfering with watertight mating to structure top or casting.

4. Provide grooves in faces to contain extrudible preformed gasket material when possible.

2.4 CASTINGS

A. Iron castings are to be ductile iron castings conforming to ASTM A536, Grade 60-40-18, or gray iron conforming to ASTM A48, free from blowholes, shrinkage, cracks and other defects.

B. Allowance for shrinkage must be made in the patterns to meet the specified thickness. Frames and lids are to seat at all points.

C. Malleable castings are to conform to ASTM A197.

D. All castings are to be made accurately to dimensions shown on the plans, and planed, filed, or ground where otherwise necessary to secure flat and true surfaces.

2.5 STEPS

A. Steps are to be polypropylene plastic encased Grade 60 steel reinforcement conforming to ASTM C478.

2.6 CAST-IN-PLACE CONCRETE

A. Concrete in accordance with Section 03 30 00 – Cast-In-Place Concrete.

B. Concrete reinforcing in accordance with Section 03 20 00 – Concrete Reinforcing.

2.7 CONCRETE AND MASONRY BLOCKS AND BRICKS

A. Precast concrete brick must conform to ASTM C55 quality designated Grade N-1.

B. Clay brick must be best quality sewer brick conforming to the qualifications of ASTM C32, except where modified here.

1. Brick must be uniform, sound, hard burned, of compact texture, free from lime and cracks with a clear ringing sound when struck, whole and with edges full and square, and of standard dimensions.

2. Brick, when thoroughly dried and immersed in water for twenty-four (24) hours, must not absorb more than 15% by weight of water.

3. If in any load of brick more than 10% are inferior, the whole load is rejected.

4. If in any load of brick less than 10% are inferior, the brick is accepted provided the Contractor pulls out all inferior bricks, and immediately removes them from the Site of the Work.

2.8 MORTAR

A. Mortar for brickwork is to be composed of one (1) part Portland cement and two (2) parts screened sand.

1. Portland cement must conform to the requirements of Section 1001 of the SSRBC.

2. Sand must be class A quality and gradation FA-9 as specified in Article 1003.02 of the SSRBC.

B. The cement and sand must be proportioned by volume and thoroughly mixed in a tight box.

C. After the initial mixing, water is to be added gradually and the ingredients mixed until the mortar is of proper consistency. The amount of water must be no more than necessary to produce a workable, plastic mortar.

D. Prepare only a sufficient amount of mortar for immediate use and any mortar that has begun to set must not be retempered or used in any way in the Work.

2.9 REINFORCING STEEL

A. Reinforcing steel in accordance with Section 03 30 00 – Cast-In-Place Concrete.

PART 3 - EXECUTION

3.1 GENERAL

A. Excavate, backfill and compact in accordance with Section 31 23 10 - Excavation, Trenching and Backfilling.

B. All brick must be thoroughly wetted immediately before being laid.

C. Old brickwork must be thoroughly cleaned and wetted before new work is jointed thereto.

D. No masonry work is to be done when the temperature is below 33º Fahrenheit unless otherwise approved, and then only under conditions for protecting it from frost.

3.2 PRE-CAST STRUCTURE INSTALLATION

A. Carefully place precast sections for all structures on prepared bedding so as to fully and uniformly support the structure and allow pipes to be laid to proper grade.

B. All lift holes on precast sections must be completely filled with mortar, smoothed on both inside and outside surfaces.

C. Seal joints between riser sections with approved mastic sealant or rubber gaskets, or as directed by the Commissioner.

D. Place one adjusting ring (only) on manhole top. Select thickness of adjusting ring to bring completed structure to required elevation.

E. Seal joints between adjusting rings and frames with approved mastic sealant before backfilling structures.

F. Install manhole frame and cover.

3.3 MASONRY STRUCTURE INSTALLATION

A. Install precast concrete or cast in place base as shown on the Drawings.

B. Lay brick courses to the line, straight and parallel, breaking joints with those in adjacent courses.

C. Lay brick radially as headers in a full bed of mortar with joints not exceeding 3/8-Inch in thickness.

D. Fill joints with mortar. Interior joints must be trowel-struck.

E. Fresh masonry must be plastered inside and outside and must be protected from damage of all kinds.

F. New work, unless immediately covered with earth or brick backing, or an approved form of curing compound, must be kept moist until the mortar has hardened.

G. Install manhole frame and cover.

3.4 FINAL ADJUSTMENT OF STRUCTURES

A. After the base course and binder course have been placed, and prior to placing the surface course, the structures must be adjusted to match the final pavement elevation.

B. Remove the binder and base course adjacent to and for a distance not exceeding 12-Inches outside the base of the castings.

C. Adjust the castings to final pavement elevation with adjusting rings set in mortar.

D. Fill the space around the casting with Class SI concrete to the elevation of the surface of the binder course.

3.5 ABANDONMENT OF VALVE BASINS AND OTHER STRUCTURES.

A. Valve basins and other structures being abandoned, the Contractor must remove the existing frame and lid and return it the City as requested by the Commissioner. The remaining parts of the structure are to be remove to a depth of 36-linch below grade and filled with fine graded aggregate or controlled low strength material (CLSM) flowable fill, as appropriate, or directed by the Commissioner. CLSM flowable material must meet standards specified in Section 31 23 10, “Excavation, Trenching and Backfilling”, paragraph 2.3, C of these specifications.

END OF SECTION 33 12 20

SECTION 33 13 00
HYDROSTATIC TESTING AND DISINFECTING WATER MAINS

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. This Section includes requirements for hydrostatic testing and disinfecting water mains as shown on the drawings and specified here.

1.2 WORK OF THIS SECTION SPECIFIED ELSEWHERE

A. Section 33 11 13 – Ductile Iron Water Pipe and Fittings.
B. Section 33 12 16 – Water Main Control Valves

1.3 REFERENCES

A. AWWA C600 –Installation of Ductile-Iron Water Mains and Their Appurtenances, latest version.
B. AWWA C651 – Disinfecting Water Main, latest edition.
C. AWWA C509 – Resilient Seated Gate Valves for Water Supply Service, latest edition.

1.4 SUBMITTALS

A. Prior to starting work, furnish the Commissioner a detailed outline of the proposed sequence of operation. Include the manner of filling and flushing the water main, the method of disposing of the water flushed from the main, the hydrostatic testing procedure, the disinfecting procedure, relevant safety procedures and other relevant procedures to be used. Include the name of the Contractor that will be disinfecting the water main.

B. All submittals will be subject to review by the Water Quality Surveillance Section (WQSS) of the Department.

1.5 QUALITY ASSURANCE

A. Hydrostatic testing of water mains must be performed in accordance with AWWA C600 and the Department's requirement specified here. The disinfection of water mains must be performed in accordance with IEPA Regulations, AWWA C651, and the Department's requirements specified here.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 PRESSURE TESTING AND FLUSHING

A. All flushing and pressure testing of water mains must meet the requirements of AWWA Specification C600.

3.2 TEST SECTIONS

A. New water pipe must be tested in section isolated from the existing city water system. All existing valves must be tested to determine if they are water tight when in the closed position. If the valves are not found to be water tight, they must be repaired or replaced before proceeding with the testing and chlorination procedure.

3.3 INITIAL FILLING

A. Each valved section of pipeline must be slowly filled with water. The sections may be filled through the isolation valves via the test taps if they are available. Before applying the specified test pressure, all air must be expelled completely from the pipeline section to be tested. When venting air from the pipeline, it is important to limit the pipeline fill rate to avoid excessive surge pressures when the water reaches the air venting opening(s). When the pipeline has been filled do not permit water to backflow into existing water mains.

3.4 PRELIMINARY FLUSHING

A. All new water mains, extensions, connections, and hydrant branches must be flushed prior to the hydrostatic testing so that water flows clear from all hydrants and test taps. The flushing operation must continue uninterrupted for a minimum of eight (8) hours or until the water flows clear. Flushing operations may be extended longer when directed by the Commissioner.

3.5 HYDROSTATIC TESTING

A. Setup

Water-pressure testing is the only method allowed for performing hydrostatic tests. Compressed-air testing methods are not permitted. Ensure that all air has been expelled after the preliminary flushing. Use a suitable pump connected to the existing water main system to apply the test pressure. Allow the pipeline to stabilize at the test pressure before conducting the hydrostatic test.

B. Testing

The test must subject the water main to a minimum hydrostatic pressure of 100 psi for a minimum period of two (2) hours. The minimum hydrostatic pressure is to be maintained at the highest point of the pipe in the test section. The test pressure may not vary by more than ±5 psi for the duration of the test. Test pressure is to be maintained within this tolerance by adding makeup water into the pipeline through the pressure test pump. The amount of makeup water added must be accurately measured in gallons (accurate to two decimal places) by suitable methods.

C. Allowable Makeup Water

The amount of makeup water added during the test must not exceed the amount calculated using the following equations:

$$L = \frac{S \times D \times T \times \sqrt{P}}{148000} \qquad \text{Equation 1}$$

L = allowable makeup water, gallons
S = length of pipe tested, feet
D = nominal diameter of pipe tested, inches
T = duration of the test, hours
P = average test pressure, pounds per square inch (gauge)

When testing against closed metal-seated valves, additional makeup water is allowed per valve, as follows:

$$L_v = D \times T \times .0078 \qquad \text{Equation 2}$$

L_v = allowable makeup water per metal-seated valve, gallons
D = nominal diameter of valve, inches
T = duration of the test, hours

For a 1,000' section of pipe tested for 2 hours at 100 psi against one closed metal-seated valve, the allowable makeup water is equal to:

Table 1
Allowable Makeup Water per 1,000 feet of Pipe, gallons
Tested at 100 psi for 2 hours

Nominal Pipe Diameter									
8”	12”	16”	24”	30”	36”	42”	48”	54”	60”
1.21	1.81	2.41	3.62	4.52	5.43	6.33	7.24	8.14	9.04

D. Visual Examination

Any and all exposed pipe, fittings, valves, hydrants, and joints must be examined carefully during the pressure test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered during or following the pressure test must be repaired or replaced with reliable material. All visible leaks are to be repaired regardless of the allowance used for testing.

E. Acceptance

Hydrostatic testing is to be repeated until all visible leaks me repaired and the amount of makeup water used is below the allowable amount. After all visible leaks have been repaired, acceptance will be determined on the basis of allowable makeup water only. If any test of a new pipeline discloses a small amount of makeup water greater than that specified above, repairs or replacements are to be accomplished in accordance with the contract documents or directed by the Commissioner.

3.6 SECONDARY FLUSHING

A. After each test section has satisfactorily passed the hydrostatic pressure test, a secondary flushing must be performed. The secondary flushing must be performed before the pipeline is disinfected. The Contractor must give a minimum forty-eight (48) hour notice to the Commissioner before performing the secondary flushing procedure.

B. For water mains less than 24-Inches in diameter, the test section must be flushed at a minimum velocity of 2.5 feet per second for a minimum of four (4) hours until the water flows clear. Flushing operations may be extended longer when directed by the Commissioner.

C. For water mains 24-Inches in diameter and larger, the test section must be flushed for a minimum of twenty-four (24) hours while maintaining a discharge flow of approximately 2,500 gallons per minute through at least one fire hydrant within the test section until the water flows clear. Flushing operations may be extended longer when directed by the Commissioner.

3.7 DISINFECTING WATER MAINS

A. After the secondary flushing has been completed and the water flows clear from the pipeline being tested, the water main must be disinfected. The disinfection procedure must be performed by a Contractor qualified to conduct such work. The Water Quality Surveillance Section (WQSS) of the Department of Water Management will observe the disinfection procedure.

3.8 FINAL FLUSHING

After completion of the chlorination process, the chlorination water must be thoroughly flushed from all pipelines. The water main must be flushed until the water flows clear and has representative distribution system chlorine residual as determined by the WQSS of the Department.

3.9 SAMPLING

When the WQSS of the Department has determined that the pipeline is ready to be sampled, the samples are to be collected under the direction of the WQSS. The samples are tested for bacterial content before the pipeline can be approved for service.

3.10 APPROVAL

Final approval of the water main rests with the WQSS of the Department.

3.11 DISPOSAL OF FLUSHING WATER

For all types of flushing, limit flow rates to existing City sewers as specified in Section 01 11 00 - Summary of Work of this specification.

3.12 SAFETY

The Contractor must have sufficient equipment to properly carry out the hydrostatic testing and disinfecting operations and have the necessary safety equipment on hand; including a Chlorine Institute Emergency Kit "A" and self-contained breathing apparatus. Failure to provide such equipment will be cause for not allowing the disinfection operation to be performed.

3.13 CONTRACTOR RESPONSIBILITY

The Contractor must have overall responsibility for hydrostatic testing, disinfecting, and sampling. The Contractor must provide all the necessary personnel to: assist in the disinfection operation; perform the final flushing operation; and assist the WQSS of the Department in the water sampling. The Contractor must be responsible for guaranteeing that sufficient and necessary sanitary precautions are taken during construction to ensure approval of the main for service.

3.14 DISINFECTION PROCEDURES WHEN CUTTING INTO OR REPAIRING EXISTING MAINS

Swab pipe and fittings that will not be pressure tested or chlorinated with chlorine solution during installation and use extra precaution to prevent soil and debris from entering the pipe. Incorporate untested pipe into the flushing routine when possible. When connecting new pipe to the existing water system, use operating pressure to visually inspect for leaks. When feasible, perform inspection prior to backfilling. Comply with all standards and requirements of the WQSS of the Department.

END OF SECTION 33 13 00

REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES

This work shall be according to Article 669 of the Standard Specifications and the following:

Qualifications. The term environmental firm shall mean an environmental firm with at least five (5) documented leaking underground storage tank (LUST) cleanups or that is pre-qualified in hazardous waste by the Department. Documentation includes but not limited to verifying remediation and special waste operations for sites contaminated with gasoline, diesel, or waste oil in accordance with all Federal, State, or local regulatory requirements and shall be provided to the Engineer for approval. The environmental firm selected shall not be a former or current consultant or have any ties with any of the properties contained within and/or adjacent to this construction project.

General. This Special Provision will likely require the Contractor to subcontract for the execution of certain activities.

All contaminated materials shall be managed as either "uncontaminated soil" or non-special waste. This work shall include monitoring and potential sampling, analytical testing, and management of a material contaminated by regulated substances. The Environmental Firm shall continuously monitor all soil excavation for worker protection and soil contamination. **Phase I Preliminary Engineering information is available through the District's Environmental Studies Unit.** Soil samples or analysis without the approval of the Engineer will be at no additional cost to the Department. The lateral distance is measured from centerline and the farthest distance is the offset distance or construction limit whichever is less.

The Contractor shall manage any excavated soils and sediment within the following areas:

- Station 80+50 to Station 87+00 (Southbound I-55) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: cis-1,2-Dichloroethene, Methylene Chloride, Tetrachloroethene, Trichloroethene, Vinyl Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Indeno(1,2,3-cd)Pyrene, and Lead.
- Station 88+00 to Station 89+70 (Southbound I-55) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride.
- Station 91+50 to Station 98+00 (Southbound I-55/Ramp SW) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Dibenzo(a,h)Anthracene, Indeno(1,2,3-cd)Pyrene, Arsenic, and Lead.

- Station 397+00 to Station 400+50 (Proposed Ramp NW) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Benzene, Methylene Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Carbazole, Dibenzo(a,h)Anthracene, Indeno(1,2,3-cd)Pyrene, Naphthalene, Arsenic, and Lead.
- Station 402+00 to Station 406+00 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Arsenic, and Lead.
- Station 406+00 to Station 408+00 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride, Benzo(a)Pyrene, Benzo(b)Fluoranthene, and Lead. Lead is classified as a **HAZARDOUS WASTE**.
- Station 408+00 to Station 410+50 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Carbazole, Dibenzo(a,h)Anthracene, Indeno(1,2,3-cd)Pyrene, Naphthalene, Arsenic, Iron, and Lead.
- Station 410+50 to Station 411+50 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Antimony, Arsenic, and Lead. Lead is classified as a **HAZARDOUS WASTE**.
- Station 411+50 to Station 417+00 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Arsenic, Iron, and Lead.
- Station 101+00 to Station 105+50 (Ramp SW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Methylene Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Arsenic, and Lead.
- Station 99+50 to Station 101+00 (Ramp SW) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(a)(1) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Benzo(a)Pyrene and Lead.
- Station 107+50 to Station 108+50 (Ramp SW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(1) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Benzo(a)Pyrene.

- Station 419+00 to Station 419+80 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(2) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Lead.
- Station 106+50 to Station 107+50 (Ramp SW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(3) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, and Lead.
- Station 87+00 to Station 88+00 (Southbound I-55) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(b)(1) and shall be managed in accordance to Article 669.09.
- Station 98+00 to Station 99+50 (Southbound I-55) 0 to 100 feet LT/RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(b)(1) and shall be managed in accordance to Article 669.09.
- Station 105+50 to Station 106+50 (Ramp SW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(b)(1) and shall be managed in accordance to Article 669.09.
- Station 108+50 to Station 110+00 (Ramp SW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(b)(1) and shall be managed in accordance to Article 669.09.

Backfill plugs shall be place within the following locations.

- Station 80+50 to Station 87+00 (Southbound I-55) 0 to 100 feet RT (I-55 ROW between Prairie Avenue and Lake Shore Drive, PESA Site 2045-5). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: cis-1,2-Dichloroethene, Trichloroethene, Vinyl Chloride, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Benzo(k)Fluoranthene, Chrysene, Indeno(1,2,3-cd)Pyrene, Arsenic, Barium, Beryllium, Cadmium, Chromium, Iron, Lead, Manganese, Nickel, Thallium, and Vanadium.
- Station 405+00 to Station 406+00 (Proposed Ramp NW) 0 to 100 feet LT/RT (Lake Shore Drive ROW 18th Street to 31st Street, PESA Site 2045-2). This material meets the criteria of Article 669.09(a)(5) and shall be managed in accordance to Article 669.09. Contaminants of concern sampling parameters: Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b)Fluoranthene, Arsenic, Boron, Iron, Lead, Manganese, Mercury, Nickel, and Vanadium.

MONITORING WELL ABANDONMENT SPECIAL PROVISION

The Contractor shall hire a licensed water well driller pursuant to the Water Well and Pump Installation Contractor's License Act. All monitoring wells removed shall be abandoned in accordance with the Illinois Water Well Construction Code 77 Illinois Administrative Code Part 920. The Department has determined that one (1) monitoring well will be impacted by construction activities.

Method of Measurement. Monitoring well abandonment will be measured for payment assuming each monitoring well is a 2 inch diameter well installed at a maximum depth of 25 feet.

Basis of Payment. Monitoring well abandonment will be paid for at the contract unit price each for MONITORING WELL ABANDONMENT.

DRAINAGE SYSTEM
Effective : June 10, 1994
Revised: January 1, 20022007

Description. This work shall consist of furnishing and installing a bridge drainage system as shown on the plans, including all piping, fittings, support brackets, inserts, bolts, and splash blocks when specified.

Material. The pipe and fittings shall be reinforced fiberglass according to ASTM D 2996 RTRP with a 30,000 psi (207 MPa) (30,000 psi) minimum short-time rupture strength hoop tensile stress. The reinforced fiberglass shall also have an apparent stiffness factor at 5 percent deflection exceeding 200 cu in.-lbf/sq. in. (22.6 cu mm-kPa) (200 cu in.-lbf/sq in) and a minimum wall thickness of 0.10 in. (2.54 mm) (0.10 in.). All pipe supports and associated hardware shall be hot dip galvanized according to AASHTO M 232 (M 232M). The fiberglass pipe and fittings furnished shall be pigmented through out, or have a resin-rich pigmented exterior coat, specifically designed for overcoating fiberglass, as recommended by the manufacturer. The color shall be as specified by the Engineer. The resin in either case shall have an ultraviolet absorber designed to prevent ultraviolet degradation. The supplier shall certify the material supplied meets or exceeds these requirements.

Design. The drainage system shall be designed as an open system with allowances for the differential expansion and contraction expected between the superstructure and the substructure to which the drainage system is attached.

Installation. All connections of pipes and fittings shown on the plans to facilitate future removal for maintenance cleanout or flushing shall be made with a threaded, gasketed coupler or a bolted gasketed flange system. Adhesive bonded joints will be permitted for runs of pipe between such connections. The end run connection shall feature a minimum nominal 6 in. (150 mm) (6 in.) female threaded fiberglass outlet. Straight runs may utilize a 45 degree reducing saddle bonded to the pipe. The female outlet shall be filled with a male threaded PVC plug.

Runs of pipe shall be supported at spacings not exceeding those recommended by the manufacturer of the pipe. Supports that have point contact or narrow supporting areas shall be avoided. Standard slings, clamps, clevis hangers and shoe supports designed for use with steel pipe may be used. A minimum strap width for hangers shall be 1 1/2 in. (40 mm) (1 1/2 in.) for all pipe under 12 in. (300 mm) (12 in.) in diameter and 2 in. (50 mm) (2 in.) for diameters 12 in. (300 mm) (12 in.) or greater. Straps shall have 120 degrees of contact with the pipe. Pipes supported on less than 120 degrees of contact shall have a split fiberglass pipe protective sleeve bonded in place with adhesive.

All reinforced fiberglass pipe, fittings, and expansion joints shall be handled and installed according to guidelines and procedures recommended by the manufacturer or supplier of the material.

Basis of Payment. This work will be paid for at the contract lump sum price for DRAINAGE SYSTEM.

HIGH LOAD MULTI-ROTATIONAL BEARINGS
Effective: October 13, 1988
Revised: October 1530, 20112012

Description. This work shall consist of furnishing and installing High Load Multi-Rotational type bearing assemblies at the locations shown on the plans.

High Load Multi-Rotational (HLMR) bearings shall be one of the following at the Contractors option unless otherwise restricted noted on the plans:

a) Pot Bearings. These bearings shall be manufactured so that the rotational capability is provided by an assembly having a rubber disc of proper thickness, confined in a manner so it behaves like a fluid. The disc shall be installed, with a snug fit, into a steel cylinder and confined by a tight fitting piston. The outside diameter of the piston shall be no more than 0.03 in. (750 microns) less than the inside diameter of the cylinder at the interface level of the piston and rubber disc. The sides of the piston shall be beveled. PTFE sheets, or silicone grease shall be utilized to facilitate rotation of the rubber disc. Suitable brass sealing rings shall be provided to prevent any extrusion between piston and cylinder.

b) Shear Inhibited Disc Type Bearing. The Structural Element shall be restricted from shear by the pin and ring design and need not be completely confined as with the Pot Bearing design. The disc shall be a molded monolithic Polyether Urethane compound.

These bearings shall be further subdivided into one or more of the following types:

1) Fixed. These allow rotation in any direction but are fixed against translation.
2) Guided Expansion. These allow rotation in any direction but translation only in limited directions.
3) Non-Guided Expansion. These allow rotation and translation in any direction.

The HLMR bearings shall be of the type specified and designed for the loads shown on the plans. The design of the top and bottom bearing plates are based on detail assumptions which are not applicable to all suppliers and may require modifications depending on the supplier chosen by the Contractor. The overall depth dimension for the HLMR bearings shall be as specified on the plans. The horizontal dimensions shall be limited to the available bearing seat area. Any modifications required to accommodate the bearings chosen shall be submitted to the Engineer for approval prior to ordering materials. Modifications required shall be made at no additional cost to the State. Inverted pot bearing configurations will not be permitted.

The Contractor shall comply with all manufacturer's material, fabrication and installation requirements specified.

All bearings shall be supplied by prequalified manufacturers. The Department will maintain a list of prequalified manufacturers.

Submittals. Shop drawings shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. In addition the Contractor shall furnish certified copies of the bearing manufacturer's test reports on the physical properties of the component materials for the bearings to be furnished and a certification by the bearing manufacturer stating the bearing assemblies furnished conform to all the requirements shown on the plans and as herein specified. Submittals with insufficient test data and supporting certifications will be rejected.

Materials. The materials for the HLMR bearing assemblies shall be according to the following:

(a) Elastomeric Materials. The rubber disc for Pot bearings shall be according to Article 1083.02(a) of the Standard Specifications.
(b) Polytetrafluoroethylene (PTFE) Material. The PTFE material shall be according to Article 1083.02(b) of the Standard Specifications.
(c) Stainless Steel Sheets: The stainless steel sheets shall be of the thickness specified and shall be according to ASTM A 240 (A 240M), Type 302 or 304. The sliding surface shall be polished to a bright mirror finish less than 20 micro-in. (510 nm) root mean square.
(d) Structural Steel. All structural steel used in the bearing assemblies shall be according to AASHTO M 270, Grade 50 (M 270M Grade 345), unless otherwise specified.
(e) Threaded studs. The threaded stud, when required, shall conform to the requirements of Article 1083.02(d)(4) of the Standard Specifications.
(f) Polyether Urethane for Disc bearings shall be according to all of the following requirements:

PHYSICAL PROPERTY	ASTM TEST METHOD	REQUIREMENTS	
Hardness, Type D durometer	D 2240	45 Min	65 Max
Tensile Stress, psi (kPa) At 100% elongation, min	D 412	1500 psi (10,350 kPa)	2300 psi (15,900 kPa)
Tensile Stress, psi (kPa) At 200% elongation, min	D 412	2800 psi (19,300 kPa)	4000 psi (27,600 kPa)
Tensile Strength, psi (kPa), min	D 412	4000 psi (27,600 kPa)	6000 psi (41,400 kPa)
Ultimate Elongation, %, min	D 412	350	220
Compression Set 22 hr. at 158 °F (70 °C), Method B %, max	D 395	40	40

The physical properties for a durometer hardness between the minimum and maximum values shown above shall be determined by straight line interpolation.

Design. The fabricator shall design the HLMR bearings according to the appropriate AASHTO Design Specifications noted on the bridge plans.

Fabrication. The bearings shall be complete factory-produced assemblies. They shall provide for rotation in all directions and for sliding, when specified, in directions as indicated on the plans. All bearings shall be furnished as a complete unit from one manufacturing source. All material used in the manufacture shall be new and unused with no reclaimed material incorporated into the finished assembly.

The translation capability for both guided and non-guided expansion bearings shall be provided by means of a polished stainless steel sliding plate that bears on a PTFE sheet bonded and recessed to the top surface of the piston or disc. The sliding element of expansion bearings shall be restrained against movement in the fixed direction by exterior guide bars capable of resisting the horizontal forces or 20 percent of the vertical design load on the bearing applied in any direction, whichever is greater. The sliding surfaces of the guide bar shall be of PTFE sheet and stainless steel. Guiding off of the fixed base, or any extension of the base, will not be permitted.

Structural steel bearing plates shall be fabricated according to Article 505.04(l) of the Standard Specifications. Prior to shipment the exposed edges and other exposed portions of the structural steel bearing plates shall be cleaned and painted according to Articles 506.03 and 506.04 of the Standard Specifications. Painting shall be with the paint specified for shop painting of structural steel. During cleaning and painting the stainless steel, PTFE sheet and neoprene shall be protected from abrasion and paint.

PTFE sheets shall be bonded to steel under factory controlled conditions using heat and pressure for the time required to set the epoxy adhesive used. The PTFE sheet shall be free from bubbles and the sliding surface shall be burnished to an absolutely smooth surface.

The steel piston and the steel cylinder for pot bearings shall each be machined from a solid piece of steel. The steel base cylinder shall be either integrally machined, recessed into with a snug fit, or continuously welded to its bottom steel bearing plate.

Packaging. Each HLMR bearing assembly shall be fully assembled at the manufacturing plant and delivered to the construction site as complete units. The assemblies shall be packaged, crated or wrapped so the assemblies will not be damaged during handling, transporting and shipping. The bearings shall be held together with removable restraints so sliding surfaces are not damaged.

Centerlines shall be marked on both top and base plates for alignment in the field. The bearings shall be shipped in moisture-proof and dust-proof covers.

Performance Testing. The following performance tests are required. All tests shall be performed by the manufacturer prior to shipment. Where lot testing is permitted, a lot size shall be the number of bearings per type on the project but not to exceed 25 bearings per type.

Dimension Check. Each bearing shall be checked dimensionally to verify all bearing components are within tolerances. Failure to satisfy any dimensional tolerance shall be grounds for rejecting the bearing component or the entire bearing assembly.

Clearance Test. This test shall be performed on one bearing per lot. The bearing selected for this test shall be the one with the least amount of clearance based on the dimension check. The bearing assembly shall be loaded to its service limit state rated capacity at its full design rotation but not less than 0.02 radians to verify the required clearances exist. This test shall be performed twice for each bearing with the rotation oriented longitudinally with the bridge once in each direction. Any visual signs of rubbing or binding shall be grounds for rejection of the lot.

Proof Load Test. This test shall be performed on one bearing per lot. The bearing assembly shall be load tested to 150 percent of the service limit state rated capacity at a rotation of 0.02 radians. The load shall be maintained for 5 minutes, removed then reapplied for 5 minutes. If the load drops below the required value during either application, the test shall be restarted from the beginning. This test shall be performed twice for each bearing with the rotation oriented longitudinally with the bridge once in each direction.

The bearing shall be visually examined both during the test and upon disassembly after the test. Any resultant visual defects include, but are not limited to:

1. Extruded or deformed elastomer, polyether urethane, or PTFE.
2. Insufficient clearances such as evidence of metal to metal contact between the pot wall and the top plate.
3. Damaged components such as cracked steel, damaged seal rings, or damaged limiting rings.
4. Bond failure.

If any of the above items are found it shall be grounds for rejection of the lot.

Sliding Friction Test. For expansion bearings, this test shall be performed on one bearing per lot. The sliding surfaces shall be thoroughly cleaned with a degreasing solvent. No lubrication other than that specified for the bearing shall be used. The bearing shall be loaded to its service limit state rated capacity for 1 hour prior to and throughout the duration of the sliding test. At least 12 cycles of plus and minus sliding with an amplitude equaling the smaller of the design displacement and 1 inch (25 mm) shall then be applied. The average sliding speed shall be between 0.1 inch and 1.0 inches (2.5 mm and 25 mm) per minute. The sliding friction coefficient shall be computed for each direction of each cycle and its mean and standard deviation shall be computed for the sixth through twelfth cycles.

The friction coefficient for the first movement and the mean plus two standard deviations for the sixth through twelfth cycles shall not exceed the design value used. In addition, the mean value for the sixth through twelfth cycles shall not exceed 2/3 of the design value used. Failure of either of these shall result in rejection of the lot.

The bearing shall also be visually examined both during and after the testing, any resultant defects, such as bond failure, physical destruction, or cold flow of the PTFE shall also be cause for rejection of the lot.

The Contractor shall furnish to the Department a notarized certification from the bearing manufacturer stating the HLMR bearings have been performance tested as specified. The Contractor shall also furnish to the Engineer of Tests at the Bureau of Materials and Physical Research (126 East Ash Springfield, IL 62704) a purchase order prior to fabrication. The purchase order shall contain, as a minimum, the quantity and size of each type of bearing furnished. The Department reserves the right to perform any of the specified tests on one or more of the furnished bearings. If the tested bearing shows failure it shall be replaced and the remaining bearings shall be similarly tested for acceptance at the Contractor's expense.

When directed by the Engineer, the manufacturer shall furnish an additional bearing assembly and/or random samples of component materials used in the bearings, for testing by the Department, according to Article 1083.04 of the Standard Specifications.

Installation. The HLMR bearings shall be erected according to Article 521.05 of the Standard Specifications.

Exposed edges and other exposed portions of the structural steel plates shall be field painted as specified for Structural Steel.

Basis of Payment. This work will be paid for at the contract unit price each for HIGH LOAD MULTI-ROTATIONAL BEARINGS, FIXED; HIGH LOAD MULTI-ROTATIONAL BEARINGS, GUIDED EXPANSION; or HIGH LOAD MULTI-ROTATIONAL BEARINGS, NON-GUIDED EXPANSION of the load rating specified.

When the fabrication and erection of HLMR bearings is accomplished under separate contracts, the applicable requirements of Article 505.09 shall apply.

Fabricated HLMR bearings and other materials complying with the requirements of this item, furnished and accepted, will be paid for at the contract unit price each for FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, FIXED, FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, GUIDED EXPANSION or FURNISHING HIGH LOAD MULTI-ROTATIONAL BEARINGS, NON-GUIDED EXPANSION of the load rating specified.

Storage and care of fabricated HLMR bearings and other materials complying with the requirements of this item by the Fabrication Contractor beyond the specified storage period, will be paid for at the contract unit price per calendar day for STORAGE OF HIGH LOAD MULTI-ROTATIONAL BEARINGS if a pay item is provided for in the contract, or will be paid for according to Article 109.04 if a pay item is not provided in the contract.

HLMR bearings and other materials fabricated under this item erected according to the requirements of the specifications, and accepted, will be paid for at the contract unit price each for ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, FIXED, ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, GUIDED EXPANSION or ERECTING HIGH LOAD MULTI-ROTATIONAL BEARINGS, NON-GUIDED EXPANSION of the load rating specified.

MODULAR EXPANSION JOINT
Effective: May 19, 1994
Revised: January 3April 18, 2014

Description. This work shall consist of furnishing and installing a modular expansion joint(s) as shown on the plans, and according to applicable portions of the Standard Specifications.

General. The expansion joint device shall be capable of handling the specified longitudinal movement. In addition, when specified, the joint shall also be capable of handling the differential non-parallel longitudinal movement. The expansion joint device shall effectively seal the joint opening in the deck surface and barrier curbs against the entrance of water and foreign materials. There shall be no appreciable change in the deck surface plane with the expansion and contraction movements of the bridge.

The device shall consist of a shop-fabricated modular assembly of transverse neoprene seals, edge and separation beams, bearing on support bars spanning the joint opening. The assembly shall maintain equal distances between intermediate support rails, at any cross section, for the entire length of the joint. The assembly shall be stable under all conditions of expansion and contraction, using a system of longitudinal control springs and upper and lower support beam bearings and springs.

At sidewalks, concrete median barriers and concrete parapet joints, a sliding steel plate shall be fabricated and installed according to the plans. Painting or galvanizing of sliding steel plates shall be as specified on the plans.

The expansion joint system options shall be limited to the following pre-approved systems:

For Modular Expansion Joints:
- Steelflex system, by the D.S. Brown Company
- WABO system, by the Watson Bowman Acme Corporation
- LR System, by TechStar Incorporated

For Swivel Modular Expansion Joints:
- MAURER Swivel system, by the D.S. Brown Company
- WABO X-CEL system, by the Watson Bowman Acme Corporation
- LG Swivel System, by TechStar Incorporated

Pre-approval of the expansion joint system does not include material acceptance at the jobsite.

Submittals: Shop drawings and a copy of the calculations and support documents shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. Submittals will be required for each modular expansion joint device specified. In addition the Contractor shall provide the Department with a certification of compliance by the manufacturer listing all materials in the system. The certification shall attest that the system conforms to the design and material requirements and be supported by a copy of the successful results of the fatigue tests performed on the system as herein specified. Submittals with insufficient test data and supporting certifications will be rejected.

The shop drawings shall include tables showing the total anticipated movements for each joint and the required setting width of the joint assemblies at various temperatures.

Design Requirements: The maximum vertical, transverse and horizontal rotations and displacements shall be defined and included in the design.

The expansion joint device(s) shall be designed, detailed and successfully tested, for non AASHTO LRFD designed structures, according to the requirements specified in NCHRP Report 402 “Fatigue Design of Modular Bridge Expansion Joints” and NCHRP Report 467 “Performance Testing for Modular Bridge Joint Systems” and for LRFD designed structures according Section 14 of the AASHTO LRFD Bridge Design Specifications.

Top, bottom and sides of support bars shall be restrained to prevent uplift, transmit bearing loads, and maintain the lateral position of the bars.

The total movement of each individual sealing element shall not exceed 3 in. (75 mm).

Materials:

(a) Metals. Structural Steel. All structural steel shall be according to AASHTO M 270, Grade 50 (M 270M Grade 345), unless otherwise specified.

Stainless steel sheets for the sliding surfaces of the support bars shall conform to the requirements of ASTM A240 (A240M) type 302 or 304.

The use of aluminum components in the modular joint will not be allowed.

(b) Preformed Elastomeric Seals. The elastomeric sealing element shall be either an elastomeric compression seal meeting the requirements of AASHTO M 220 or strip seal meeting the requirements of Article 1052.02(a) of the Standard Specifications.according to ASTM D5973.

Lubricant/Adhesive for installing the preformed elastomeric elements in place shall be a one-part, moisture-curing, polyurethane and hydrocarbon solvent mixture as recommended by the manufacturer and containing not less than 65 percent solids.

(c) Support Bar Bearings. Support bar bearings shall be fabricated from elastomeric pads with polytetrafluorethylene (PTFE) surfacing or from polyurethane compound with PTFE sliding surfaces. The elastomeric and PTFE materials shall meet the requirements of Section 1083 of the Standard Specifications.

(d) Control Springs. Suitable elastomeric type springs which work longitudinally shall be used to maintain the equidistant spacing between transverse edge and separation beams when measured at any given cross section through the joint.

(e) Support Bars. Support bars shall incorporate stainless steel sliding surfaces to permit joint movement.

Construction Requirements

General. Installation of expansion devices shall be according to the plans and shop drawings.

The fabricator of the modular joint assembly shall be AISC certified according to Article 106.08 for Bridge and Highway Metal Component Manufacturers. In lieu of AISC certification, the Contractor may have all welding on main members (support bars and separation beams) observed and inspected by independent (third party) personnel at the Contractor's expense. Welding shall then be observed by a Certified Welding Inspector (CWI) in addition to the manufacturer's own welding inspection. Third party Non Destructive Examination (NDE) shall be performed by inspector(s), certified as level II in applicable methods, and all complete penetration beam-to-bar welds and butt joints in beams shall be UT inspected and 10 percent of fillets and partial pen welds shall be MT inspected.

The manufacturer of the expansion device shall provide a qualified technical service representative to supervise installation. Modular expansion joint devices shall be factory prefabricated assemblies, preset by the manufacturer prior to shipment with provisions for field adjustment for the ambient temperature at the time of installation.

Unless otherwise shown on the plans, the neoprene seals shall be continuous without any field splices.

All steel surfaces of the prefabricated assembly shall be shop painted with the primer specified for structural steel, except areas in direct contact with the seals, galvanized items and stainless steel surfaces.

The metal surfaces in direct contact with the neoprene seals shall be blast cleaned to permit a high strength bond of the lubricant/adhesive between the neoprene seal and mating metal surfaces.

The Contractor shall anticipate and make all necessary adjustments to existing or plan-specified reinforcement bars, subject to the approval of the Engineer, in order to prevent interferences with placement of the selected joint in the structure. Any adjustments to reinforcement bars interfering with the joint installation shall be the responsibility of the Contractor and preapproved by the Engineer prior to installation of the joint. Cutting of reinforcement shall be minimized, and any bars that are cut shall be replaced in-kind at no additional cost.

The prefabricated joint assembly shall be properly positioned and attached to the structure according to the manufacturer's approved shop drawings. The attachment shall be sufficiently rigid to prevent non-thermal rotation, distortion, or misalignment of the joint system relative to the deck prior to casting the concrete. The joints shall be adjusted to the proper opening based on the ambient temperature at the time of installation and then all restraints preventing thermal movement shall be immediately released and/or removed. The joint assembly units shall be straight, parallel and in proper vertical alignment or reworked until proper adjustment is obtained prior to casting of the concrete around the joint.

After the joint system is installed, the joint area shall be flooded with water and inspected, from below for leakage. If leakage is observed, the joint system shall be repaired, at the expense of the Contractor, as recommended by the manufacturer and approved by the Engineer.

Method of Measurement. This work will be measured for payment in place, in feet (meters), along the centerline of the joint from face to face of the parapets or curbs. All sliding plate assemblies at the sidewalks, parapets and median barriers will not be measured for payment. The size will be defined as the specified longitudinal movement rounded up to the nearest 3 inch (75 mm) increment.

Basis of Payment: When only a longitudinal movement is specified, this work will be paid for at the contract unit price per foot (meter) for the MODULAR EXPANSION JOINT, of the size specified. When a differential non parallel movement is also specified, this work will be paid for at the contract unit price per foot (meter) for the MODULAR EXPANSION JOINT-SWIVEL, of the size specified.

All materials, equipment and labor required to fabricate, paint and install the sliding plate assemblies at the sidewalks, parapets and median barriers will not be paid for separately but shall be included in the price for the expansion joint specified.

When the fabrication and erection of modular expansion joint is accomplished under separate contracts, the applicable requirements of Article 505.09 shall apply, except the furnishing pay items shall include storage and protection of fabricated materials up to 75 days after the completion dates.

Fabricated modular expansion joints and other materials complying with the requirements of this item, furnished and accepted, will be paid for at the contract unit price per foot (meter) for FURNISHING MODULAR EXPANSION JOINT or FURNISHING MODULAR EXPANSION JOINT – SWIVEL of the size specified.

Storage and care of fabricated joints and other materials complying with the requirements of this item by the Fabrication Contractor beyond the specified storage period, will be paid for at the contract unit price per calendar day for STORAGE OF MODULAR EXPANSION JOINTS if a pay item is provided for in the contract, or will be paid for according to Article 109.04 if a pay item is not provided in the contract.

Modular expansion joints and other materials erected according to the requirements of the specifications, and accepted, will be paid for at the contract unit price per foot (meter) for ERECTING MODULAR EXPANSION JOINT or ERECTING MODULAR EXPANSION JOINT - SWIVEL of the size specified.

DECK SLAB REPAIR
Effective: May 15, 1995
Revised: January 18October 15, 2011

This work shall consist of hot-mix asphalt surface removal, when required, the removal and disposal of all loose and deteriorated concrete from bridge deck and the replacement with new concrete to the original top of deck. The work shall be done according to the applicable requirements of Sections 501, 503 and 1020 of the Standard Specifications and this Special Provision.

Deck slab repairs will be classified as follows:

(a) Partial-Depth. Partial-depth repairs shall consist of removing the loose and unsound deck concrete, disposing of the concrete removed and replacing with new concrete. The removal may be performed by chipping with power driven hand tools or by hydro-scarification equipment. The depth shall be measured from the top of the concrete deck surface, at least 3/4 in. (20 mm) but not more than 1/2 the concrete deck thickness.

(b) Full-Depth. Full-depth repairs shall consist of removing concrete full-depth of the deck, disposing of the concrete removed, and replacing with new concrete to the original concrete deck surface. The removal may be performed with power driven hand tools, hydraulic impact equipment, or by hydro-scarification equipment. Full-depth repairs shall be classified for payment as Full-Depth, Type I and Full-Depth, Type II according to the following:

Type I Full-depth patches less than or equal to 5 sq. ft. (0.5 sq m) in area. The minimum dimensions for a patch shall be 1 ft. x 1 ft. (300 mm x 300 mm).

Type II Full-depth patches greater than 5 sq. ft. (0.5 sq. m) in area.

Materials.

Materials shall be according to Article 1020.02.

Portland cement concrete for partial and full-depth repairs shall be according to Section 1020. Class PP-1, PP-2, PP-3, PP-4, PP-5 or BS concrete shall be used at the Contractor's option unless noted otherwise on the contract plans. For Class BS concrete, a CA 13, 14, or 16 shall be used. If the BS concrete mixture is used only for full depth repairs, a CA-11 may be used. In Section 1020, revise the second sentence of Note 10 for Table 1 of Article1020.04 to read as follows for Class PP concrete: "The bridge deck patching mix design strength shall be increased to 4000 psi (27,500 kPa) compressive or 675 psi (4650 kPa) flexural, and the mixture shall have 72 hours to obtain the required strength."

Equipment:

The equipment used shall be subject to the approval of the Engineer and shall meet the following requirements:

(a) Surface Preparation Equipment. Surface preparation and concrete removal equipment shall be according to the applicable portions of Section 1100 and the following:

(1) Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

(2) Blast Cleaning Equipment. The blast cleaning may be performed by wet sandblasting, high-pressure waterblasting, shotblasting or abrasive blasting. Blast cleaning equipment shall be capable of removing rust and old concrete from exposed reinforcement bars, and shall have oil traps.

(3) Power-Driven Hand Tools. Power-driven hand tools will be permitted including jackhammers lighter than the nominal 45 lb. (20 kg) class. Chipping hammers heavier than a nominal 15 lb. (6.8 kg) class shall not be used for removing concrete from below any reinforcing bar for partial depth repairs, or for removal within 1 ft (300 mm) of existing beams, girders or other supporting structural members that are to remain in service or within 1 ft (300 mm) of the boundaries of full-depth repairs. Jackhammers or chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

(4) Hydraulic Impact Equipment. Hydraulic impact equipment with a maximum rated striking energy of 360 ft-lbs (270 J) may be permitted only in areas of full depth removal more than 1 ft (300 mm) away from existing beams, girders or other supporting structural members that are to remain in service or more than 1 ft (300 mm) from the boundaries of full-depth repairs.

(5) Hydro-Demolition Equipment. The hydro-demolition equipment shall consist of filtering and pumping units operating with a remote-controlled robotic device. The equipment shall use water according to Section 1002. The equipment shall be capable of being controlled to remove only unsound concrete.

(b) Concrete Equipment: Equipment for proportioning and mixing the concrete shall be according to Article 1020.03.

(c) Finishing Equipment: Finishing equipment shall be according to Article 1103.17. Adequate hand tools will be permitted for placing and consolidating concrete in the patch areas and for finishing small patches.

Construction Requirements: Sidewalks, curbs, drains, reinforcement and/or existing transverse and longitudinal joints which are to remain in place shall be protected from damage during removal and cleaning operations.

The Contractor shall control the runoff water generated by the various construction activities in such a manner as to minimize, to the maximum extent practicable, the discharge of untreated effluent into adjacent waters, and shall properly dispose of the solids generated according to Article 202.03. The Contractor shall submit a water management plan to the Engineer specifying the control measures to be used. The control measures shall be in place prior to the start of runoff water generating activities. Runoff water shall not be allowed to constitute a hazard to adjacent or underlying roadways, waterways, drainage areas or railroads nor be allowed to erode existing slopes.

(a) Hot-Mix Asphalt Surface Removal.

The hot-mix asphalt surface course and all waterproofing membrane shall be removed and disposed of according to applicable portions of Articles 440.04 and 440.06, except milling equipment will not be allowed if the deck is to receive a waterproofing membrane system. If the overlay or waterproofing membrane contains asbestos fibers, removal shall be in accordance with the Special Provision for "Asbestos Waterproofing Membrane or Asbestos Hot-mix Asphalt Surface Removal". Removal of the hot-mix asphalt surface by the use of radiant or direct heat will not be permitted.

(b) Surface Preparation:

All loose, disintegrated and unsound concrete shall be removed from portions of the deck slab shown on the plans or as designated by the Engineer. The Engineer will determine the limits of removal as the work progresses.

The Contractor shall take care not to damage reinforcement bars or expansion joints which are to remain in place. Any damage to reinforcement bars or expansion joints shall be corrected at the Contractor's expense. All loose reinforcement bars, as determined by the Engineer, shall be retied at the Contractor's expense.

(1) Partial-Depth. Areas to be repaired will be determined and marked by the Engineer. A concrete saw shall be used to provide vertical edges approximately 3/4 in. (20 mm) deep around the perimeter of the area to be patched when a concrete overlay is not specified. Where high steel is present, the depth may be reduced as directed by the Engineer. A saw cut will not be required on those boundaries along the face of the curb, parapet or joint or when sharp vertical edges are provided by hydro-demolition.

The loose and unsound concrete shall be removed by chipping, with power driven hand tools or by hydro-demolition equipment. All exposed reinforcing bars and newly exposed concrete shall be thoroughly blast cleaned. Where, in the judgment of the Engineer, the bond between existing concrete and reinforcement steel within the patch area has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 1 in. (25 mm) clearance will be required. The Engineer may require enlarging a designated removal area should inspection indicate deterioration beyond the limits previously designated. In this event, a new saw cut shall be made around the extended area before additional removal is begun. The removal area shall not be enlarged solely to correct debonded reinforcement or deficient lap lengths.

(2) Full-Depth. Concrete shall be removed as determined by the Engineer within all areas designated for full-depth repair and in all designated areas of partial depth repair in which unsound concrete is found to extend below half the concrete deck thickness. Full depth removal shall be performed according to Article 501.05 except that hydraulic impact equipment may be permitted in areas of full depth removal more than 1 ft (300 mm) away from the edges of existing beams, girders or other supporting structural members or more than 1 ft (300 mm) from the boundaries of full-depth repairs. Saw cuts shall be made on the top of the deck, except those boundaries along the face of curbs, parapets and joints or where hydro-demolition provided sharp vertical edges. The top saw cut may be omitted if the deck is to receive an overlay.

Forms for full-depth repair may be supported by hangers with adjustable bolts or by blocking from the beams below. When approved by the Engineer, forms for Type 1 patches may be supported by No. 9 wires or other devices attached to the reinforcement bars.

All form work shall be removed after the curing sequence is complete and prior to opening to traffic.

(3) Reinforcement Treatment. Care shall be exercised during concrete removal to protect the reinforcement bars and structural steel from damage. Any damage to the reinforcement bars or structural steel to remain in place shall be repaired or replaced. All existing reinforcement bars shall remain in place except as herein provided for corroded bars. Tying of loose bars will be required. Reinforcing bars which have been cut or have lost 25 percent or more of their original cross sectional area shall be supplemented by new in kind reinforcement bars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. An approved mechanical bar splice capable of developing in tension at least 125 percent of the yield strength of the existing bar shall be used when it is not feasible to provide the minimum bar lap. No welding of bars will be permitted.

(4) Cleaning. Immediately after completion of the concrete removal and reinforcement repairs, the repair areas shall be cleaned of dust and debris. Once the initial cleaning is completed, the repair areas shall be thoroughly blast cleaned to a roughened appearance free from all foreign matter. Particular attention shall be given to removal of concrete fines. Any method of cleaning which does not consistently produce satisfactory results shall be discontinued and replaced by an acceptable method. All debris, including water, resulting from the blast cleaning shall be confined and shall be immediately and thoroughly removed from all areas of accumulation. If concrete placement does not follow immediately after the final cleaning, the area shall be carefully protected with well-anchored polyethylene sheeting.

Exposed reinforcement bars shall be free of dirt, detrimental scale, paint, oil, or other foreign substances which may reduce bond with the concrete. A tight non-scaling coating of rust is not considered objectionable. Loose, scaling rust shall be removed by rubbing with burlap, wire brushing, blast cleaning or other methods approved by the Engineer.

(c) Placement & Finishing of Concrete Repair:

(1) Bonding Method. The patch area shall be cleaned to the satisfaction of the Engineer and shall be thoroughly wetted and maintained in a dampened condition with water for at least 12 hours before placement of the concrete. Any excess water shall be removed by compressed air or by vacuuming prior to the beginning of concrete placement. Water shall not be applied to the patch surface within one hour before or at any time during placement of the concrete.

(2) Concrete Placement.

The concrete shall be placed and consolidated according to Article 503.07 and as herein specified. Article 1020.14 shall apply.

When an overlay system is not specified, the patches shall be finished according to Article 503.16 (a), followed by a light brooming.

(d) Curing and Protection.

Concrete patches shall be cured by the Wetted Burlap or Wetted Cotton Mat Method according to Article 1020.13 (a)(3) or Article 1020.13 (a)(5). The curing period shall be 3 days for Class PP-1, PP-2, PP-3, PP-4, and PP-5 concrete. The curing period shall be 7 days for Class BS concrete. In addition to Article 1020.13, when the air temperature is less than 55º F (13º C), the Contractor shall cover the patch according to Article 1020.13 (d)(1) with minimum R12 insulation. Insulation is optional when the air temperature is 55º F. - 90º F (13º C - 32º C). Insulation shall not be placed when the air temperature is greater than 90° F (32° C). A 72-hour minimum drying period shall be required before placing waterproofing or hot-mix asphalt surfacing.

(e) Opening to Traffic.

No traffic will be permitted on a patch until after the specified cure period, and the concrete has obtained a minimum compressive strength of 4000 psi (27.6 MPa) or flexural strength of 675 psi (4.65 MPa).

Construction equipment will be permitted on a patch during the cure period if the concrete has obtained the minimum required strength. In this instance, the strength specimens shall be cured with the patch.

Method of Measurement.

When specified, hot-mix asphalt surface removal and full or partial depth repairs will be measured for payment and computed in square yards (square meters).

Basis of Payment.

The hot-mix asphalt surface removal will be paid for at the contract unit price per square yard (square meter) for HOT-MIX ASPHALT SURFACE REMOVAL (DECK). Areas removed and replaced up to and including a depth of half the concrete deck thickness will be paid for at the contract unit price per square yard (square meter) for DECK SLAB REPAIR (PARTIAL). Areas requiring removal greater than a depth of half the concrete deck thickness shall be removed and replaced full depth and will be paid for at the contract unit price per square yard (square meter) for DECK SLAB REPAIR (FULL DEPTH, TYPE I) and/or DECK SLAB REPAIR (FULL DEPTH, TYPE II).

When corroded reinforcement bars are encountered in the performance of this work and replacement is required, the Contractor will be paid according to Article 109.04.

No payment will be allowed for removal and replacement of reinforcement bars damaged by the Contractor in the performance of his/her work or for any increases in dimensions needed to provide splices for these replacement bars.

Removal and disposal of asbestos waterproofing and/or asbestos bituminous concrete will be paid for as specified in the Special Provision for “Asbestos Waterproofing Membrane or Asbestos Hot-Mix Asphalt Surface Removal”.

TEMPORARY SOIL RETENTION SYSTEM
Effective: December 30, 2002
Revised : January 1May 11, 20072009

Description. This work shall consist of designing, furnishing, installing, adjusting for stage construction when required and subsequent removal of the temporary soil retention system according to the dimensions and details shown on the plans and in the approved design submittal.

General. The temporary soil retention system shall be designed by the Contractor as a minimum, to retain the exposed surface area specified in the plans or as directed by the Engineer.

The design calculations and details for the temporary soil retention system proposed by the Contractor shall be submitted to the Engineer for approval. The calculations shall be prepared and sealed by an Illinois Licensed Structural Engineer. This approval will not relieve the Contractor of responsibility for the safety of the excavation. Approval shall be contingent upon acceptance by all involved utilities and/or railroads.

Construction. The Contractor shall verify locations of all underground utilities before installing any of the soil retention system components or commencing any excavation. Any disturbance or damage to existing structures, utilities or other property, caused by the Contractor's operation, shall be repaired by the Contractor in a manner satisfactory to the Engineer at no additional cost to the Department. The soil retention system shall be installed according to the Contractor's approved design, or as directed by the Engineer, prior to commencing any related excavation. If unable to install the temporary soil retention system as specified in the approved design, the Contractor shall have the adequacy of the design re-evaluated. Any reevaluation shall be submitted to the Engineer for approval prior to commencing the excavation adjacent to the area in question. The Contractor shall not excavate below the maximum excavation line shown in the approved design without the prior permission of the Engineer. The temporary soil retention system shall remain in place until the Engineer determines it is no longer required.

The temporary soil retention system shall be removed and disposed of by the Contractor when directed by the Engineer. When allowed, the Contractor may elect to cut off a portion of the temporary soil retention system leaving the remainder in place. The remaining temporary soil retention system shall be removed to a depth which will not interfere with the new construction, and as a minimum, to a depth of 12 in. (300 mm) below the finished grade, or as directed by the Engineer. Removed system components shall become the property of the Contractor.

When an obstruction is encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to break up, push aside, or remove the obstruction. An obstruction shall be defined as any object (such as but not limited to, boulders, logs, old foundations etc.) where its presence was not obvious or specifically noted on the plans prior to bidding, that cannot be driven or installed through or around, with normal driving or installation procedures, but requires additional excavation or other procedures to remove or miss the obstruction.

Method of Measurement. The temporary soil retention system furnished and installed according to the Contractor's approved design or as directed by the Engineer will be measured for payment in place, in square feet (square meters). The area measured shall be the vertical exposed surface area envelope of the excavation supported by temporary soil retention system. Portions of the temporary soil retention system left in place for reuse in later stages of construction shall only be measured for payment once.

Any temporary soil retention system cut off, left in place, or installed beyond those dimensions shown on the contract plans or the approved contractor's design without the written permission of the Engineer, shall not be measured for payment but shall be done at the contractor's own expense.

Basis of Payment. This work will be paid for at the contract unit price per square foot (square meter) for TEMPORARY SOIL RETENTION SYSTEM.

Payment for any excavation, related solely to the installation and removal of the temporary soil retention system and/or its components, shall not be paid for separately but shall be included in the unit bid price for TEMPORARY SOIL RETENTION SYSTEM. Other excavation, performed in conjunction with this work, will not be included in this item but shall be paid for as specified elsewhere in this contract.

Obstruction mitigation shall be paid for according to Article 109.04 of the Standard Specifications.

SEGMENTAL CONCRETE BLOCK WALL
Effective: January 7, 1999
Revised: August 17October 30, 2012

Description. This work shall consist of furnishing the design computations, shop plans, materials, equipment and labor to construct a Segmental Concrete Block Retaining Wall to the limits shown on the plans.

General. The wall shall consist of a leveling pad, precast concrete blocks (either dry-cast or wet cast), select fill and, if required by the design, soil reinforcement. The wall shall be designed and constructed according to the lines, grades, and dimensions shown on the contract plans and approved shop plans.

Submittals. The wall supplier shall submit design computations and shop plans to the Engineer according to Article 1042.03(b) of the Standard Specifications. No work or ordering of materials for the structure shall be done by the Contractor until the submittal has been approved in writing by the Engineer. The shop plans shall be sealed by an Illinois Licensed Structural Engineer and shall include all details, dimensions, quantities, and cross sections necessary to construct the wall and shall include, but not be limited to, the following items:

(a) Plan, elevation, and cross section sheet(s) for each wall showing the following:

(1) A plan view of the wall indicating the offsets from the construction centerline to the first course of blocks at all changes in horizontal alignment. These shall be calculated using the offsets to the front face of the block shown on the contract plans and the suppliers proposed wall batter. The plan view shall indicate bottom (and top course of block when battered), the excavation and select fill limits as well as any soil reinforcing required by the design. The centerline of any drainage structure or pipe behind or passing through/under the wall shall also be shown.

(2) An elevation view of the wall, indicating the elevation and all steps in the top course of blocks along the length of the wall. The top of these blocks shall be at or above the theoretical top of block line shown on the contract plans. This view shall also show the steps and proposed top of leveling pad elevations as well as the finished grade line at the wall face specified on the contract plans. These leveling pad elevations shall be located at or below the theoretical top of leveling line shown on the contract plans. The location, size, and length of any soil reinforcing connected to the blocks shall be indicated.

(3) Typical cross section(s) showing the limits of the select fill, soil reinforcement if used in the design. The right-of-way limits shall be indicated as well as the proposed excavation, cut slopes, and the elevation relationship between existing ground conditions and proposed grades.

(4) All general notes required for constructing the wall.

(b) All details for the leveling pads, including the steps, shall be shown. The theoretical top of the leveling pad shall either be below the anticipated frost depth or 1.5 ft. (450 mm) below the finished grade line at the wall face, whichever is greater; unless otherwise shown on the plans. The minimum leveling pad thickness shall be 6 in. (152 mm)

(c) Cap blocks shall be used to cover the top of the standard block units. The top course of blocks and cap blocks shall be stepped to satisfy the top of block line shown on the contract plans.

(d) All details of the block and/or soil reinforcement placement around all appurtenances located behind, on top of, or passing through the wall shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular design arrangement shall also be submitted.

(e) All details of the blocks, including color and texture shall be shown. The exterior face shall preferably be straight, textured with a “split rock face” pattern, and dark gray in color unless otherwise stated on the plans.

(f) All block types (standard, cap, corner, and radius turning blocks) shall be detailed showing all dimensions.

(g) All blocks shall have alignment/connection devices such as shear keys, leading/trailing lips, or pins. The details for the connection devices between adjacent blocks and the block to soil reinforcement shall be shown. The block set back or face batter shall be limited to 20 degrees from vertical, unless otherwise shown by the plans.

Materials. The materials shall meet the following requirements:

(a) Dry-Cast Concrete Block: Dry-cast concrete block proposed for use shall be pre-cast and produced according Article 1042.02 and the requirements of ASTM C1372 except as follows:

1. Fly ash shall be according to Articles 1010.01 and 1010.02(b).

2. Ground granulated blast-furnace slag shall be according to Articles 1010.01 and 1010.05.

3. Aggregate shall be according to Articles 1003.02 and 1004.02, with the exception of gradation.

4. Water shall be according to Section 1002.

5. Testing for freeze-thaw durability will not be required. However, unsatisfactory field performance as determined by the Department will be cause to prohibit the use of the block on Department projects.

(b) Wet-cast Concrete Block: Wet-cast concrete block proposed for use shall be pre-cast and produced according to Section 1020 and Article 1042.02. The concrete shall be Class PC with a minimum compressive strength of at least 3000 psi (31 MPa) at 28 days.

(c) Select fill: The select fill, defined as the material placed in the reinforced volume behind the wall, shall be according to Sections 1003 and 1004 of the Standard Specifications and the following:

(1) Select Fill Gradation. Either a coarse aggregate or a fine aggregate may be used. For coarse aggregate, gradations CA 6 thru CA 16 may be used. For fine aggregate, gradations FA 1, FA 2, or FA 20 may be used.

Other aggregate gradations may be used provided the maximum aggregate size is 1 1/2 in. (38 mm), the maximum material passing the #40 (425 μm) sieve is 60 percent, and the maximum material passing the #200 (75 μm) sieve is 15 percent.

(2) Select Fill Quality. The coarse or fine aggregate shall have a maximum sodium sulfate (Na_2SO_4) loss of 15 percent according to Illinois Modified AASHTO T 104be Class B quality or better, except that a maximum of 15 percent of the material may be finer than the #200 (75 μm) sieve.

(3) Select Fill Internal Friction Angle. The effective internal friction angle for the coarse or fine aggregate shall be a minimum 34 degrees according to AASHTO T 236 on samples compacted to 95 percent density according to Illinois Modified AASHTO T 99. The AASHTO T 296 test with pore pressure measurement may be used in lieu of AASHTO T 236. If the vendor's design uses a friction angle higher than 34 degrees, as indicated on the approved shop drawings, this higher value shall be taken as the minimum required.

(4) Select Fill and Geosynthetic Reinforcing. When geosynthetic reinforcing is used, the select fill pH shall be 4.5 to 9.0 according to Illinois Modified AASHTO T 289.

(5) Test Frequency. Prior to start of construction, the Contractor shall provide internal friction angle and pH test results to show the select fill material meets the specification requirements. However, the pH will be required only when geosynthetic reinforcing is used. All test results shall not be older than 12 months. In addition, a sample of select fill material will be obtained for testing and approval by the Department. Thereafter, the minimum frequency of sampling and testing at the jobsite will be one per 2040,000 cubic yardstons (15,50036,300 cubic metersmetric tons) of select fill material. Testing to verify the internal friction angle will only be required when the wall design utilizes a minimum effective internal friction angle greater than 34 degrees, or when crushed coarse aggregate is not used.

When a fine aggregate is selected, the rear of all block joints shall be covered by a non-woven needle punch geotextile filter material according to Article 1080.05 of the Standard Specifications and shall have a minimum permeability according to ASTM D4491 of 0.008 cm/sec. All fabric overlaps shall be 6 in. (150 mm) and non-sewn. As an alternative to the geotextile, a coarse aggregate shall be placed against the back face of the blocks to create a minimum 12 in. (300 mm) wide continuous gradation filter to prevent the select fill material from passing through the block joints.

(d) Leveling pad: The material shall be either Class SI concrete according to Article 1020.04 or compacted coarse aggregate according to Articles 1004.04, (a) and (b). The compacted coarse aggregate gradation shall be CA 6 or CA 10.

(e) Soil Reinforcement: If soil reinforcement is required by the approved design, the Contractor shall submit a manufacturer's certification for the soil reinforcement properties which equals or exceeds those required in the design computations. The soil reinforcement shall be manufactured from high density polyethylene (HDPE) uniaxial or polypropylene biaxial resins or high tenacity polyester fibers with a PVC coating, stored between -20 and 140° F (-29 and 60° C). The following standards shall be used in determining and demonstrating the soil reinforcement capacities:

ASTM D638 Test Method for Tensile Properties of Plastic
ASTM D1248 Specification for Polyethylene Plastics Molding and Extrusion Materials
ASTM D4218 Test Method for Carbon Black Content in Polyethylene Compounds
ASTM D5262 Test Method for Evaluating the Unconfined Tension Creep Behavior of Geosynthetics
GG1-Standard Test Method for Geogrid Rib Tensile Strength
GG2-Standard Test Method for Geogrid Junction Strength
GG4-Standard Practice for Determination of the Long Term Design Strength of Geogrid
GG5-Standard Practice for Evaluating Geogrid Pullout Behavior

Design Criteria. The design shall be according to AASHTO Specifications and commentaries for Earth Retaining Walls or FHWA Publication No. HI-95-038, SA-96-071 and SA-96-072. The wall supplier shall be responsible for all internal stability aspects of the wall design.

Internal stability design shall insure that adequate factors of safety against overturning and sliding are present at each level of block. If required by design, soil reinforcement shall be utilized and the loading at the block/soil reinforcement connection as well as the failure surface must be indicated. The calculations to determine the allowable load of the soil reinforcement and the factor of safety against pullout shall also be included. The analysis of settlement, bearing capacity, and overall slope stability are the responsibility of the Department.

External loads such as those applied through structure foundations, from traffic or railroads, slope surcharge etc., shall be accounted for in the internal stability design. The presence of all appurtenances behind, in front of, mounted upon, or passing through the wall volume such as drainage structures, utilities, structure foundation elements, or other items shall be accounted for in the internal stability design of the wall.

Construction Requirements. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include all costs related to this technical assistance in the unit price bid for this item.

The foundation material for the leveling pad and select fill volume shall be graded to the design elevation and compacted according to Article 205.05, except the minimum required compaction shall be 95 percent of the standard laboratory density. The Engineer will perform one density test per 1500 ft (450 m) of the entire length of foundation material through both cut and fill areas. Any foundation soils found to be unsuitable shall be removed and replaced as directed by the Engineer and shall be paid for according to Article 109.04.

The select fill lift placement shall closely follow the erection of each course of blocks. All aggregate shall be swept from the top of the block prior to placing the next block lift. If soil reinforcement is used, the select fill material shall be leveled and compacted before placing and attaching the soil reinforcement to the blocks. The soil reinforcement shall be pulled taut, staked in place, and select fill placed from the rear face of the blocks outward. The lift thickness shall be the lesser of 10 in. (255 mm) loose measurement or the proposed block height.

The select fill shall be compacted according to Article 205.05, except the minimum required compaction shall be 95 percent of the standard laboratory density. Compaction shall be achieved using a minimum of 3 passes of a lightweight mechanical tamper, roller, or vibratory system. The Engineer will perform one density test per 5000 cu yd (3800 cu m) and not less than one test per 2 ft (0.6m) of lift. The top 12 in. (300 mm) of backfill shall be a cohesive, impervious material capable of supporting vegetation, unless other details are specified on the plans.

The blocks shall be maintained in position as successive lifts are compacted along the rear face of the block. Vertical, horizontal, and rotational alignment tolerances shall not exceed 0.5 in. (12 mm) when measured along a 10 ft. (3 m) straight edge.

Method of Measurement. Segmental Concrete Block Wall will be measured by the square foot (square meter) of wall face from the top of block line to the theoretical top of the leveling pad for the length of the wall in a vertical plane, as shown on the contract plans.

Basis of Payment. This work will be paid for at the contract unit price per square foot (square meter) for SEGMENTAL CONCRETE BLOCK WALL.

STRUCTURAL ASSESSMENT REPORTS FOR CONTRACTOR'S MEANS AND METHODS

Effective: March 6, 2009

Description

This item shall consist of preparing and submitting, to the Engineer for approval, Structural Assessment Reports (SARs) for proposed work on structure(s) or portions thereof. Unless noted otherwise, a SAR shall be required when the Contractor's means and methods apply loads to the structure or change its structural behavior. A SAR shall be submitted and approved prior to beginning the work covered by that SAR. Separate portions of the work may be covered by separate SARs which may be submitted at different times or as dictated by the Contractor's schedule.

Existing Conditions. An Existing Structure Information Package (ESIP) will be provided by the Department to the Contractor upon request. This package will typically include existing or "As-Built" plans, and the latest National Bridge Inspection Standards (NBIS) inspection report. The availability of structural information from the Department is solely for the convenience and information of the Contractor and shall not relieve the Contractor of the duty to make, and the risk of making, examinations and investigations as required to assess conditions affecting the work. Any data furnished in the ESIP is for information only and does not constitute a part of the Contract. The Department makes no representation or warranty, express or implied, as to the information conveyed or as to any interpretations made from the data.

Removal SARs. A SAR for removal of existing structures, or portions thereof, shall demonstrate that the Contractor's proposed means and methods to accomplish the work do not compromise the structural adequacy of the bridge, or portions thereof that are to remain in service, at any time during the work activities being performed. Each phase of the operation shall be accounted for, as well as the existing condition of the structure.

Construction SARs. A SAR for new construction or for construction utilizing existing components shall demonstrate that the Contractor's proposed means and methods to accomplish the work do not compromise the structural adequacy of the bridge or portions thereof at any time during the work activities being performed. For construction activities applying less than 10 tons (9 metric tons) of total combined weight of equipment and stockpiled materials on the structure at any one time, a SAR submittal shall not be required provided the Contractor submits written verification to the Engineer stating the applied loads do not exceed this threshold. The verification shall be submitted prior to the start of the activity. This SAR exemption shall not relieve the Contractor from responsibility for the structure. A SAR shall be submitted in all cases where the existing structure is posted for less than legal loads or the Contract plans indicate a live load restriction is in place.

REQUIREMENTS

a) General. All work specified shall be performed according to the Contract plans, Special Provisions and/or Standard Specifications governing that work.

Submittals for falsework and forming for concrete construction shall be according to Articles 503.05 and 503.06 and does not require a SAR. Moving construction equipment across a structure, or portions thereof, open to traffic shall be addressed according to Article 107.16 and does not require a SAR. Operating equipment on an in-service structure and/or using a portion of an in-service structure as a work platform shall require a SAR and Article 107.16 shall not apply.

The Contractor may move vehicles across the existing bridge without a SAR after closure and prior to removal of any portion of the structure provided:

- The vehicles satisfy the requirements of Section 15-111 of the Illinois Vehicle Code (described in the IDOT document "Understanding the Illinois Size & Weight Laws") or of the Federal Highway Administration document "Bridge Formula Weights" (available at: http://ops.fhwa.dot.gov/freight/publications/brdg_frm_wghts/bridge_formula_all.pdf)
- The Contractor submits written verification to the Engineer stating the vehicles meet these requirements. The verification shall be submitted prior to allowing the vehicles on the structure.

This SAR exemption shall not relieve the Contractor from responsibility for the structure. This SAR exemption shall not be allowed where the existing structure is posted for less than legal loads or the Contract plans indicate a live load restriction is in place. No stockpiling of material is allowed under this exemption.

All SARs shall detail the procedures and sequencing necessary to complete the work in a safe and controlled manner. When appropriate, supporting design calculations shall be provided verifying the following:

- The effects of the applied loads do not exceed the capacity at Operating level for any portions of the structure being utilized in the demolition of the structure provided those portions are not to be reused.
- The effects of the applied loads do not exceed the capacity at Inventory level for new construction or for portions of the existing structure that are to be reused.
- The condition of the structure and/or members has been considered.

See AASHTO Manual for Bridge Evaluation for further information on determining the available capacities at the Operating and Inventory levels.

b) Confidential Documents. Due to the sensitivity of the inspection reports and bridge condition reports to bridge security, the following confidentiality statement applies to these reports:

"Reports used by the Contractor and the contents thereof are the property of the Department, and are subject to the control of the Department in accordance with State and Federal law. The distribution, dissemination, disclosure, duplication or release of these reports or the content thereof in any manner, form or format without the express permission of the keeper of this record is prohibited. The owner is the official keeper of these records, except for state owned bridges, where the official keeper of these records is the Regional Engineer."

c) Submittals. The Contractor shall be pre-approved to prepare SAR(s) or shall retain the services of a pre-qualified engineering firm to provide these services. Pre-approval of the Contractor will be determined by the Illinois Department of Transportation and will allow SAR(s) preparation by the Contractor unless otherwise noted on the plans. For engineering firms, pre-qualification shall be according to the Department in the category of "Highway Bridges-Typical" unless otherwise noted on the plans. Firms involved in any part of the project (plan development or project management) will not be eligible to provide these services. Evidence of pre-approval/pre-qualification shall be submitted with all SAR(s). The SAR(s) shall be prepared and sealed by an Illinois Licensed Structural Engineer. The Contractor shall submit SAR(s), complete with working drawings and supporting design calculations, to the Engineer for approval, at least 30 calendar days prior to start of that portion of the work.

At a minimum a Structural Assessment Report shall include the following:

1. A plan outlining the procedures and sequence for the work, including staging when applicable.
2. A demolition plan (when removal is included as an item of work in the contract) including details of the proposed methods of removal.
3. A beam erection plan (when beam erection is included as an item of work in the contract) including details of the proposed methods of erection.
4. Pertinent specifications for equipment used during the work activity.
5. The allowable positions for that equipment during the work activity.
6. The allowable positions and magnitudes of stockpiled materials and/or spoils, if planned to be located on the structure.
7. Design and details for temporary shoring and/or bracing, if required by the Contractor's means and methods.

Approval or acceptance of a Structural Assessment Report shall not relieve the Contractor of any responsibility for the successful completion of the work.

Revisions to the Contractor's means and methods resulting in no increased load effects to the structure, as determined by the Contractor's Structural Engineer, shall not require a SAR resubmittal. However, the Contractor's Structural Engineer shall submit to the Engineer written verification that there is no increased load effect. The written verification shall specify the revisions and shall be submitted prior to the start of the revised activities.

The Contractor shall be responsible for following the approved SAR related to the work involved.

METHOD OF MEASUREMENT
Structural Assessment Reports will not be measured for payment.

BASIS OF PAYMENT
Structural Assessment Reports will not be paid for separately but shall be considered as included in the contract unit price(s) for the work item(s) specified.

BRACED EXCAVATION
Effective: August 9, 1995
Revised: January May 18, 2011

Description. This work shall include the installation of a bracing system, excavation, and backfilling to the elevation of the existing grade according to Section 502 and the following. The bracing system shall be designed and installed to prevent the movement of soil, structures, pavements and/or utilities adjacent to the excavated area.

Consists of furnishing, installing and removing all necessary sheeting and bracing members required to support the excavation according to the applicable requirements of Section 502 of the Standard Specifications. This item shall also include all excavation of earth necessary to obtain the bottom of footing elevations shown on the plans where braced excavation is indicated. The bracing shall properly support excavations by the use of sheeting, timber or plates etc., to prevent movement of soil, structures, pavements or utilities outside of the excavated area.

Construction Requirements. The bracing system shall support excavations by the use of sheeting, timber or plates. The Contractor shall submit design calculations and shop drawings prepared and sealed by an Illinois Licensed Structural Engineer for the bracing system. Shop drawings shall show all necessary details for the construction of the bracing system. The design calculations and shop drawings shall be submitted to the Engineer for review and approval.

This work shall not proceed without the approval and authorization of the Engineer. However, in any event, the Contractor shall be fully responsible for the safety, stability and adequacy of the bracing system and shall be solely responsible and liable for all damages resulting from his construction operations or from failure or inadequacy of the bracing system.

In the event the bracing system protecting the existing embankment fails or is otherwise inadequate, in the judgment of the Engineer, the Contractor shall, at his own expense, take all necessary steps to restore the embankments to a safe operating condition to the satisfaction of the Engineer.

Bracing members shall be installed as soon as an excavation level is reached to permit their installation. Bracing members shall be completely removed after the excavation is backfilled.

Method of Measurement. This work shall be measured in cubic yards (cubic meters) according to the requirements for structure excavation as specified in Section 502.14 12 of the Standard Specifications.

Basis of Payment. This work will be paid for at the contract unit price per cubic yard (cubic meter) for BRACED EXCAVATION. Payment for BRACED EXCAVATION will be limited to those locations shown on the plans. All sheeting and bracing members associated with braced excavation will not be measured for payment but shall be included in the cost for BRACED EXCAVATION. No separate payment will be made for structure excavation where BRACED EXCAVATION is shown.

PERMANENT STEEL SHEET PILING (LRFD)
Effective: January 31, 2012
Revised: August 17, 2012

Description. This work shall consist of furnishing and installing the permanent sheet piling to the limits and tolerances shown on the plans according to Section 512 of the Standard Specifications.

Material. The sheet piling shall be made of steel and shall be new material. Unless otherwise specified the sheeting shall have a minimum yield strength of 50 ksi (345 MPa) according to ASTM A 572. The sheeting shall be identifiable and free of bends and other structural defects. The Contractor shall furnish a copy of the published sheet pile section properties to the Engineer for verification purposes. The Engineer's approval will be required prior to driving any sheeting. All driven sheeting not approved by the Engineer shall be removed at the Contractor's expense.

The Contractor shall furnish a sheet pile section, to be used for each wall section, with a published section modulus equal to or larger than that specified on the plans.

The selection of the sheet pile section shall not relieve the Contractor of the responsibility to satisfy all details including minimum clearances, cover, embedment, reinforcement, shear stud locations, interlocking, and field cutting. Any modifications of the plans to accommodate the Contractor's selection shall be paid for by the Contractor and subject to the approval of the Engineer.

Construction. The Contractor shall verify locations of all underground utilities before driving any sheet piling. Any disturbance or damage to existing structures, utilities or other property, caused by the Contractor's operation, shall be repaired by the Contractor in a manner satisfactory to the Engineer at no additional cost to the Department. The Contractor shall be responsible for determining the appropriate equipment necessary to drive the sheeting to the tip elevation(s) specified on the plans or according to the Contractor's approved design. The sheet piling shall be driven, as a minimum, to the tip elevation(s) specified, prior to commencing any related construction. If unable to reach the minimum tip elevation, the adequacy of the sheet piling design will require re-evaluation by the Department prior to allowing construction adjacent to the sheet piling in question.

Obstructions. Obstructions shall be defined as any object (such as but not limited to, boulders, logs, old foundations, etc.) that cannot be driven through with normal driving procedures, but requires special equipment to remove the obstruction. When obstructions are encountered, the Contractor shall notify the Engineer and upon concurrence of the Engineer, the Contractor shall begin working to break up, push aside, or remove the obstruction.

Method of Measurement. This work will be measured in place in square feet (square meters). Sheet piling associated with other work in this contract or for permanent sheet piling that is cut off or driven beyond those dimensions shown on the plans will not be measured for payment.

Obstruction mitigation shall be paid for according to Article 109.04.

Basis of Payment. This work will be paid for at the contract unit price per square foot (square meter) for PERMANENT STEEL SHEET PILING at the location shown on the plans.

BRIDGE DECK CONSTRUCTION
Effective: October 22, 2013
Revised: 1April 18, 2014

Revise the Second Paragraph of Article 503.06(b) to read as follows.

"When the Contractor uses cantilever forming brackets on exterior beams or girders, additional requirements shall be as follows."

Revise Article 503.06(b)(1) to read as follows.

"(1) Bracket Placement. The spacing of brackets shall be per the manufacturer's published design specifications for the size of the overhang and the construction loads anticipated. The resulting force of the leg brace of the cantilever bracket should bear on the web. In addition, for beams or girders where the rail supporting the finishing machine is supported outside the centerline of the exterior girder by a distance of more than half the girder depth, the bracket should shall bear on the web within 6 inches (150 mm) from the top of the bottom flange of the beam or girder."

Revise Article 503.06(b)(2) to read as follows.

"(2) Beam Ties. The top flange of the exterior steel beams or girders supporting the cantilever forming brackets shall be tied to the bottom flange of the next interior beam. The top flange of theexterior concrete beams supporting the cantilever forming brackets shall be tied to the top flange of the next interior beam. The ties shall be spaced at 4 ft (1.2 m) centers maximum. Permanent cross frames on steel girders may be considered a tie.Ties located within 4 ft (1.2 m) of permanent cross frames connecting the beams or girders may be omitted. Ties shall be a minimum of 1/4 2 inch (6 13 mm) diameter threaded rod with an adjusting mechanism for drawing the tie taut. The ties shall utilize hanger brackets or clips which hook onto the flange of steel beams without the assistance of welding or drilling to the any part of the beam. No welding will be permitted to the structural steel or stud shear connectors, or to reinforcement bars of concrete beams, for the installation of the tie bar system. After installation of the ties and blocking, the tie shall be drawn taut until the tie does not vary from a straight line from beam to beam. The tie system shall be approved by the Engineer."

Revise Article 503.06(b)(3) to read as follows.

"(3) Beam Blocks. Suitable beam blocks of 4 in x 4 in (100 x 100 mm) timbers or metal structural shapes of equivalent strength or better, acceptable to the Engineer, shall be wedged between the webs of the two beams tied together, within 6 inches (150 mm) of the bottom flange at each location where they are tied. When it is required but not feasible to have the resulting force from the leg brace of the cantilever brackets transmitted to the web within 6 inches (150 mm) of the bottom flange, then additional blocking shall be utilized spaced placed at each bracket but not less than 30 inches (750 mm) apart to transmit the resulting force to within 6 inches (150 mm) of the bottom flange of the next interior beam or girder."

Delete the last paragraph of Article 503.06(b).

Revise the third paragraph of Article 503.16 to read as follows.

"Fogging equipment shall be in operation unless the evaporation rate is less than 0.1 lb/sq ft/hour (0.5kg/sq m/hour) and the Engineer gives permission to stop. The evaporation rate shall be determined according to the following formula.

$$E = (T_c^{2.5} - rT_a^{2.5})(1 + 0.4V)x10^{-6} \, (English)$$

$$E = 5[(T_c + 18)^{2.5} - r(T_a + 18)^{2.5}](V + 4)x10^{-6} \, (Metric)$$

Where:

E = Evaporation Rate, lb/ft^2/h (kg/sq m/h)

T_c = Concrete Temperature, °F (°C)

T_a = Air Temperature, °F (°C)

r = Relative Humidity in percent/100

V = Wind Velocity, mph (km/h)

The Contractor shall provide temperature, relative humidity, and wind speed measuring equipment. Fogging equipment shall be adequate to reach or cover the entire pour from behind the finishing machine or vibrating screed to the point of curing covering application, and shall be operated in a manner which shall not accumulate water on the deck until the curing covering has been placed."

Revise the first sentence of the third paragraph of Article 503.16(a)(1) to read as follows.

"At the Contractor's option, a vibrating screed may be used in lieu of a finishing machine for superstructures with a pour width less than or equal to 24 ft (7.3 m). After the concrete is placed and consolidated, it shall be struck off with a vibrating screed allowing for camber, if required. The vibrating screed shall be of a type approved by the Engineer. A slight excess of concrete shall be kept in front of the cutting edge at all times during the striking off operation. After screeding, the entire surface shall be finished with hand-operated longitudinal floats having blades not less than 10 ft (3 m) in length and 6 in. (150 mm) in width. Decks so finished need not be checked for straightnessstraightedge tested as specified in 503.16(a)(2)."

Delete the fifth paragraph of 503.16(a)(1).

Revise Article 503.16(a)(2) to read as follows.

"(2) Straightedge Testing and Surface Correction. After the finishing has been completed and while the concrete is still plastic, the surface shall be tested for trueness with a 10 ft (3 m) straightedge, or a hand-operated, longitudinal float having blades not less than 10 ft (3 m) in length and 6 in. (150 mm) in width. The Contractor shall furnish and use an accurate 10 ft (3 m) straightedge or float which has a handle not less than 3 ft (1 m) longer than 1/2 the pour width. The straightedge or float shall be held in contact with the surface and passed gradually from one side of the superstructure to the other. Advance along the surface shall be in successive stages of not more than 1/2 the length of the straightedge or float. Any depressions found shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished."

Replace the second sentence of the first paragraph of Article 1020.13(a)(5) with the followsfollowing sentences.

"Cotton mats in poor condition will not be allowed. The cotton mats shall be placed in a manner which will not create indentations greater than 1/4 inch (6 mm) in the concrete surface. Minor marring of the surface is tolerable and is secondary to the importance of timely curing."

Revise the Article 1020.14(b) to read as follows.

"(b) Concrete in Structures. Concrete may be placed when the air temperature is above 40 °F (4 °C) and rising, and concrete placement shall stop when the falling temperature reaches 45 °F (7 °C) or below, unless otherwise approved by the Engineer.

(1) Bridge Deck Superstructure Concrete. For concrete in superstructures bridge decks, slabs, and bridge approach slabs the Contractor shall schedule placing and finishing of the concrete during hours in which the ambient air temperature is forecast to be lower than 85 °F (30 °C). It shall be understood Night time pours may be required at no addition to the contractthis may require scheduling the deck pour at night in order to utilize the temperature window available. The temperature of the concrete immediately before placement shall be a minimum of 50 °F (10 °C) and a maximum of 85 °F (30 °C).

(2) Non-Bridge Deck Concrete. The Except as noted above, the temperature of the concrete immediately before placement shall be a minimum of 50 °F (10 °C) and a maximum of 90 °F (32 °C). If concrete is pumped, the temperature of the concrete at point of placement shall be a minimum of 50 °F (10 °C) and a maximum of 90 °F (32 °C).

If concrete is pumped, the temperature restrictions above shall be considered at point of placement. When insulated forms are used according to Article 1020.13(d)(1), the maximum temperature of the concrete mixture immediately before placement shall be 80 °F (25 °C).

When concrete is placed in contact with previously placed concrete, the temperature of the freshly mixed concrete may be increased to 80 °F (25 °C) by the Contractor to offset anticipated heat loss, but in no case shall the maximum concrete temperature be permitted to exceed the limits stated in this Article."

Revise Article 1103.13(a) to read as follows.

"(a) Bridge Deck. The finishing machine shall be equipped with: (1) a mechanical strike off device; (2) either a rotating cylinder(s) or a longitudinal oscillating screed which transversely finishes the surface of the concrete. The Contractor may attach other equipment to the finishing machine to enhance the final finish when approved by the Engineer. The finishing machine shall produce a floor deck surface of uniform texture, free from porous areas, and with the required surface smoothness.

The finishing machine shall be operated on rails or other supports that will not deflect under the applied loads. The maximum length of rail segments supported on top of existing beams and within the pour shall be 10 ft (3 m). The supports shall be adjustable for elevation and shall be completely in place to allow the finishing machine to be used for the full length of the area to be finished. The supports shall be approved by the Engineer before placing of the concrete is started."

Revise Article 1103.17(k) to read as follows.

"(k) Fogging Equipment. Fogging equipment shall be hand held fogging equipment for humidity control. The equipment shall be capable of atomizing water to produce a fog blanket by the use of pressure 2500 psi minimum (17.24 MPa) and an industrial fire hose fogging nozzle or equivalent. Fogging equipment attached to the finishing machine will not be permitted."

COATED GALVANIZED STEEL CONDUIT (BDE)
Effective: January 1, 2013 Revised: January 1, 2015

Revise Article 811.03(b) of the Standard Specifications to read:

"(b) Coated Galvanized Steel Conduit. In addition to the methods described in Article 810.05(a) the following methods shall be observed when installing coated conduit.

Coated conduit pipe vise jaw adapters shall be used when the conduit is being clamped to avoid damaging the coating.

Coated conduit shall be cut with a roller cutter or by other means approved by the conduit manufacturer.

After any cutting or threading operations are completed, the bare steel shall be touched up with the conduit manufacturer's touch up compound."

Revise Article 1088.01(a)(3) of the Standard Specifications to read:

"(3) Coated Galvanized Steel Conduit. The conduit prior to coating shall meet the requirements for rigid metal conduit and be manufactured according to NEMA Standard No. RN1.

The coating shall have the following characteristics.

Hardness	85+ Shore A Durometer
Dielectric Strength	400 V/mil @ 60 Hz
Aging	1,000 Hours Atlas Weatherometer
Brittleness Temperature	0 °F (-18 °C) when tested according to ASTM D 746
Elongation	200 percent

The exterior galvanized surfaces shall be coated with a primer before the coating to ensure a bond between the zinc substrate and the coating. The bond strength created shall be greater than the tensile strength of the plastic coating. The nominal thickness of the coating shall be 40 mils (1 mm). The coating shall pass the following bonding test.

Two parallel cuts 1/2 in. (13 mm) apart and 1 1/2 in. (38 mm) in length shall be made with a sharp knife along the longitudinal axis. A third cut shall be made perpendicular to and crossing the longitudinal cuts at one end. The knife shall then be worked under the coating for 1/2 in. (13 mm) to free the coating from the metal.

Using pliers, the freed tab shall be pulled with a force applied vertically and away from the conduit. The tab shall tear rather than cause any additional coating to separate from the substrate.

A two part urethane coating shall be applied to the interior of the conduit. The internal coating shall have a nominal thickness of 2 mils (50 µm). The interior coating shall be applied in a manner so there are no runs, drips, or pinholes at any point. The coating shall not peel, flake, or chip off after a cut is made in the conduit or a scratch is made in the coating. The urethane interior coating applied shall afford sufficient flexibility to permit field bending without cracking or flaking of the interior coating.

All conduit fittings and couplings shall be as specified and recommended by the conduit manufacturer. All conduit fitting covers shall be furnished with stainless steel screws which have been encapsulated with a polyester material on the head to ensure maximum corrosion protection."

COILABLE NONMETALLIC CONDUIT (BDE)
Effective: August 1, 2014 Revised: January 1, 2015

Revise Article 1088.01(c) of the Standard Specifications to read:

"(c) Coilable Nonmetallic Conduit. The conduit shall be a high density polyethylene duct which is intended for underground use can be manufactured and coiled or reeled in continuous transportable lengths and uncoiled for further processing and/or installation without adversely affecting its properties or performance. The conduit and its manufacture shall be according to UL Standard 651A for Schedule 40 conduit, except Schedule 80 shall be used under pavement, stabilized shoulder, paved median, paved driveway, curb and/or gutter and sidewalk.

Performance Tests. Testing procedures and test results shall meet the requirements of UL Standard 651A. Certified copies of the test report shall be submitted to the Engineer prior to the installation of the conduit."

CONCRETE GUTTER, CURB, MEDIAN, AND PAVED DITCH (BDE)
Effective: April 1, 2014 Revised: August 1, 2014

Add the following to Article 606.02 of the Standard Specifications:

"(i) Polyurethane Joint Sealant .....1050.04"

Revise the fifth paragraph of Article 606.07 of the Standard Specifications to read:

"Transverse contraction and longitudinal construction joints shall be sealed according to Article 420.12, except transverse joints in concrete curb and gutter shall be sealed with polysulfide or polyurethane joint sealant."

Add the following to Section 1050 of the Standard Specifications:

"**1050.04 Polyurethane Joint Sealant.** The joint sealant shall be a polyurethane sealant, Type S, Grade NS, Class 25 or better, Use T (T_1 or T_2), according to ASTM C 920."

CONSTRUCTION AIR QUALITY – DIESEL RETROFIT (BDE)
Effective: June 1, 2010 Revised: January 1, 2014
November 1, 2014

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term "equipment" refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted using the phased in approach shown below. Equipment that is of a model year older than the year given for that equipment's respective horsepower range shall be retrofitted:

Effective Dates	Horsepower Range	Model Year
June 1, 2010 [1/]	600-749	2002
	750 and up	2006
June 1, 2011 [2/]	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006
June 1, 2012 [2/]	50-99	2004
	100-299	2003
	300-599	2001
	600-749	2002
	750 and up	2006

1/ Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

2/ Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

a) Included on the U.S. Environmental Protection Agency (USEPA) *Verified Retrofit Technology List* (http://www.epa.gov/cleandiesel/verification/verif-list.htm), or verified by the California Air Resources Board (CARB) (http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm); or

b) Retrofitted with a non-verified diesel retrofit emission control device if verified retrofit emission control devices are not available for equipment proposed to be used on the project, and if the Contractor has obtained a performance certification from the retrofit device manufacturer that the emission control device provides a minimum PM emission reduction of 50 percent.

Note: Large cranes (Crawler mounted cranes) which are responsible for critical lift operations are exempt from installing retrofit emission control devices if such devices adversely affect equipment operation.

Diesel powered off-road equipment with engine ratings of 50 hp and above, which are unable to be retrofitted with verified emission control devices or if performance certifications are not available which will achieve a minimum 50 percent PM reduction, may be granted a waiver by the Department if documentation is provided showing good faith efforts were made by the Contractor to retrofit the equipment.

Construction shall not proceed until the Contractor submits a certified list of the diesel powered off-road equipment that will be used, and as necessary, retrofitted with emission control devices. The list(s) shall include (1) the equipment number, type, make, Contractor/rental company name; and (2) the emission control devices make, model, USEPA or CARB verification number, or performance certification from the retrofit device manufacturer. Equipment reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation, prior to being used on the jobsite.

The Contractor shall submit an updated list of retrofitted off-road construction equipment as retrofitted equipment changes or comes on to the jobsite. The addition or deletion of any diesel powered equipment shall be included on the updated list.

If any diesel powered off-road equipment is found to be in non-compliance with any portion of this special provision, the Engineer will issue the Contractor a diesel retrofit deficiency deduction.

Any costs associated with retrofitting any diesel powered off-road equipment with emission control devices shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall not be grounds for a claim.

Diesel Retrofit Deficiency Deduction

When the Engineer determines that a diesel retrofit deficiency exists, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be $1,000.00 for each deficiency identified.

The deficiency will be based on lack of diesel retrofit emissions control.

If a Contractor accumulates three diesel retrofit deficiency deductions for the same piece of equipment in a contract period, the Contractor will be shutdown until the deficiency is corrected. Such a shutdown will not be grounds for any extension of the contract time, waiver of penalties, or be grounds for any claim.

CONTRACT CLAIMS (BDE)
Effective: April 1, 2014

Revise the first paragraph of Article 109.09(a) of the Standard Specifications to read:

"(a) Submission of Claim. All claims filed by the Contractor shall be in writing and in sufficient detail to enable the Department to ascertain the basis and amount of the claim. As a minimum, the following information must accompany each claim submitted."

Revise Article 109.09(e) of the Standard Specifications to read:

"(e) Procedure. The Department provides two administrative levels for claims review.

Level I Engineer of Construction
Level II Chief Engineer/Director of Highways or Designee

(1) Level I. All claims shall first be submitted at Level I. Two copies each of the claim and supporting documentation shall be submitted simultaneously to the District and the Engineer of Construction. The Engineer of Construction, in consultation with the District, will consider all information submitted with the claim and render a decision on the claim within 90 days after receipt by the Engineer of Construction. Claims not conforming to this Article will be returned without consideration. The Engineer of Construction may schedule a claim presentation meeting if in the Engineer of Construction's judgment such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. If a Level I decision is not rendered within 90 days of receipt of the claim, or if the Contractor disputes the decision, an appeal to Level II may be made by the Contractor.

(2) Level II. An appeal to Level II shall be made in writing to the Engineer of Construction within 45 days after the date of the Level I decision. Review of the claim at Level II shall be conducted as a full evaluation of the claim. A claim presentation meeting may be scheduled if the Chief Engineer/Director of Highways determines that such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. A Level II final decision will be rendered within 90 days of receipt of the written request for appeal.

Full compliance by the Contractor with the provisions specified in this Article is a contractual condition precedent to the Contractor's right to seek relief in the Court of Claims. The Director's written decision shall be the final administrative action of the Department. Unless the Contractor files a claim for adjudication by the Court of Claims within 60 days after the date of the written decision, the failure to file shall constitute a release and waiver of the claim."

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)
Effective: September 1, 2000
Revised: August 2, 2011January 2, 2015

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

> The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not be limited to:.
>
> (a) Withholding progress payments;
>
> (b) Assessing sanctions;
>
> (c) Liquidated damages; and/or
>
> (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform **15.00%** of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

(a) The bidder documents that enough DBE participation has been obtained to meet the goal or,

(b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at www.dot.il.gov.

BIDDING PROCEDURES. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

(a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.

(b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.

(c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:

(1) The names and addresses of DBE firms that will participate in the contract;

(2) A description, including pay item numbers, of the work each DBE will perform;

(3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;

(4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;

(5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,

(6) If the contract goal is not met, evidence of good faith efforts; the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

(a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with Section 6 of the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

(5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

(7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.

(b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination.

(c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217) 785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation and/oror argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.

(e) DBE as a material supplier:

(1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.

(2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.

(3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement.

(a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.

(b) TERMINATION OR REPLACEMENT. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in the Special Provision.

(cb) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, than a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

(c) SUBCONTRACT. The Contractor must provide DBE subcontracts to IDOT upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.

(d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:

(1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or

(2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or

(3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

(e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a). Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE listed in the Utilization Plan.

The As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;

(3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law.

(6) You have determined that the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;

(8) The listed DBE is ineligible to receive DBE credit for the type of work required;

(9) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;

(10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

(f) PAYMENT RECORDS. The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.

(g) ENFORCEMENT. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor my request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of “Good Faith Effort Procedures” of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

FRICTION AGGREGATE (BDE)
Effective: January 1, 2011 Revised: November 1, 2014

Revise Article 1004.01(a)(4) of the Standard Specifications to read:

"(4) Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing undisturbed, consolidated deposits of rock by mechanical means. Crushed stone shall be divided into the following, when specified.

a. Carbonate Crushed Stone. Carbonate crushed stone shall be either dolomite or limestone. Dolomite shall contain 11.0 percent or more magnesium oxide (MgO). Limestone shall contain less than 11.0 percent magnesium oxide (MgO).

b. Crystalline Crushed Stone. Crystalline crushed stone shall be either metamorphic or igneous stone, including but is not limited to, quartzite, granite, rhyolite and diabase."

Revise Article 1004.03(a) of the Standard Specifications to read:

"**1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA).** The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate for HMA shall be according to the following table.

Use	Mixture	Aggregates Allowed
Class A	Seal or Cover	Allowed Alone or in Combination [5/]: Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete
HMA Low ESALAll Other	Stabilized Subbase or Shoulders	Allowed Alone or in Combination [5/]: Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag [1/] Crushed Concrete

<table>
<tr><th>Use</th><th>Mixture</th><th>Aggregates Allowed</th></tr>
<tr><td>HMA
High ESAL
Low ESAL</td><td>Binder
IL-25.0, IL-19.0,
or IL-19.0L

SMA Binder</td><td><u>Allowed Alone or in Combination</u> [5/]:

Crushed Gravel
Carbonate Crushed Stone[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Concrete[3/]</td></tr>
<tr><td>HMA
High ESAL
Low ESAL</td><td>C Surface and Leveling Binder
IL-12.5,IL-9.5,
or IL-9.5L

SMA
Ndesign 50 Surface</td><td><u>Allowed Alone or in Combination</u> [5/]:

Crushed Gravel
Carbonate Crushed Stone[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)
Crushed Steel Slag[4/]
Crushed Concrete[3/]</td></tr>
<tr><td rowspan="5">HMA
High ESAL</td><td rowspan="5">D Surface and Leveling Binder
IL-12.5 or
IL-9.5

SMA
Ndesign 50
Surface</td><td><u>Allowed Alone or in Combination</u> [5/]:

Crushed Gravel
Carbonate Crushed Stone (other than Limestone)[2/]
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)[5/]
Crushed Steel Slag[4/ 5/]
Crushed Concrete[3/]</td></tr>
<tr><td><u>Other Combinations Allowed:</u></td></tr>
<tr><td>Up to... | With...</td></tr>
<tr><td>25% Limestone | Dolomite</td></tr>
<tr><td>50% Limestone | Any Mixture D aggregate other than Dolomite</td></tr>
<tr><td>75% Limestone | Crushed Slag (ACBF)[5/] or Crushed Sandstone</td></tr>
<tr><td rowspan="3">HMA
High ESAL</td><td rowspan="3">E Surface
IL-12.5 or
IL-9.5

SMA
Ndesign 80
Surface</td><td><u>Allowed Alone or in Combination</u> [5/]:

Crushed Gravel
Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)[5/]
Crushed Steel Slag[5/]
Crushed Concrete[3/]

No Limestone.</td></tr>
<tr><td><u>Other Combinations Allowed:</u></td></tr>
<tr><td>Up to... | With...</td></tr>
</table>

<table>
<tr><th>Use</th><th>Mixture</th><th colspan="2">Aggregates Allowed</th></tr>
<tr><td rowspan="3"></td><td rowspan="3"></td><td>50% Dolomite[2/]</td><td>Any Mixture E aggregate</td></tr>
<tr><td>75% Dolomite[2/]</td><td>Crushed Sandstone, Crushed Slag (ACBF)[5/], Crushed Steel Slag[5/], or Crystalline Crushed Stone</td></tr>
<tr><td>75% Crushed Gravel or Crushed Concrete[3/]</td><td>Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF)[5/], or Crushed Steel Slag[5/]</td></tr>
<tr><td rowspan="4">HMA
High ESAL</td><td rowspan="4">F Surface
IL-12.5 or
IL-9.5

SMA
Ndesign 80
Surface</td><td colspan="2"><u>Allowed Alone or in Combination</u> [5/]:

Crystalline Crushed Stone
Crushed Sandstone
Crushed Slag (ACBF)[5/]
Crushed Steel Slag[5/]
No Limestone.</td></tr>
<tr><td colspan="2"><u>Other Combinations Allowed</u>:</td></tr>
<tr><td>Up to...</td><td>With...</td></tr>
<tr><td>50% Crushed Gravel, Crushed Concrete[3/], or Dolomite[2/]</td><td>Crushed Sandstone, Crushed Slag (ACBF)[5/], Crushed Steel Slag[5/], or Crystalline Crushed Stone</td></tr>
</table>

1/ Crushed steel slag allowed in shoulder surface only.
2/ Carbonate crushed stone shall not be used in SMA Ndesign 80. In SMA Ndesign 50, carbonate crushed stone shall not be blended with any of the other aggregates allowed alone in Ndesign 50 SMA binder or Ndesign 50 SMA surface.
3/ Crushed concrete will not be permitted in SMA mixes.
4/ Crushed steel slag shall not be used as leveling binder.

5/ When combinations of aggregates are used, the blend percent measurements shall be by volume.5/ When either slag is used, the blend percentages listed shall be by volume."

GROOVING FOR RECESSED PAVEMENT MARKINGS (BDE)
Effective: November 1, 2012 Revised: January 1, 2013August 1, 2014

Description. This work shall consist of grooving the pavement surface in preparation for the application of recessed pavement markings.

Equipment. Equipment shall be according to the following.

(a) Pavement Marking Tape Installations: The grooving equipment shall have a free-floating saw blade cutting head equipped with gang-stacked diamond saw blades. The diamond saw blades shall be of uniform wear and shall produce a smooth textured surface. Any ridges in the groove shall have a maximum height of 15 mils (0.38 mm).

(b) Liquid and Thermoplastic Pavement Marking Installations: The grooving equipment shall be equipped with either a free-floating saw blade cutting head or a free-floating grinder cutting head configuration with diamond or carbide tipped cutters and shall produce an irregular textured surface.

CONSTRUCTION REQUIREMENTS

General. The Contractor shall supply the Engineer with a copy of the pavement marking material manufacturer's recommendations for constructing a groove.

Pavement Grooving Methods. The grooves for recessed pavement markings shall be constructed using the following methods.

(a) Wet Cutting Head Operation. When water is required or used to cool the cutting head, the groove shall be flushed with high pressure water immediately following the cut to avoid build up and hardening of slurry in the groove. The pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking material.

(b) Dry Cutting Head Operation. When used on HMA pavements, the groove shall be vacuumed or cleaned by blasting with high-pressure air to remove loose aggregate, debris, and dust generated during the cutting operation. When used on PCC pavements, the groove shall be flushed with high pressure water or shot blasted to remove any PCC particles that may have become destabilized during the grooving process. If high pressure water is used, the pavement surface shall be allowed to dry for a minimum of 24 hours prior to the final cleaning of the groove and application of the pavement marking material.

Pavement Grooving. Grooving shall not cause ravels, aggregate fractures, spalling or disturbance of the joints to the underlying surface of the pavement. Grooves shall be cut into the pavement prior to the application of the pavement marking material. Grooves shall be cut such that the width is 1 in. (25 mm) greater than the width of the pavement marking line as specified on the plans. Grooves for letters and symbols shall be cut in a square or rectangular shape so that the entire marking will fit within the limits of the grooved area. The position of the edge of the grooves shall be a minimum of 4 in. (100 mm) from the edge of all longitudinal joints. The depth of the groove shall not be less than the manufacturer's recommendations for the pavement marking material specified, but shall be installed to a minimum depth of 110 mils (2.79 mm) and a maximum depth of 200 mils (5.08 mm) for pavement marking tapes thermoplastic markings and a minimum depth of 40 mils (1.02 mm) and a maximum depth of 80 mils (2.03 mm) for liquid markings. The cutting head shall be operated at the appropriate speed in order to prevent undulation of the cutting head and grooving at an inconsistent depth.

At the start of grooving operations, a 50 ft (16.7 m) test section shall be installed and depth measurements shall be made at 10 ft (3.3 m) intervals within the test section. The individual depth measurements shall be within the allowable ranges according to this Article. If it is determined the test section has not been grooved at the appropriate depth or texture, adjustments shall be made to the cutting head and another 50 ft (16.7 m) test section shall be installed and checked. This process shall continue until the test section meets the requirements of this Article.

For new HMA pavements, grooves shall not be installed within 14 days of the placement of the final course of pavement.

Final Cleaning. Immediately prior to the application of the pavement marking material or primer sealer, the groove shall be cleaned with high-pressure air blast.

Method of Measurement. This work will be measured for payment in place, in feet (meter) for the groove width specified.

Grooving for letter, numbers and symbols will be measured in square feet (square meters).

Basis of Payment. This work will be paid for at the contract unit price per foot (meter) for GROOVING FOR RECESSED PAVEMENT MARKING of the groove width specified, and per square foot (square meter) for GROOVING FOR RECESSED PAVEMENT MARKING, LETTERS AND SYMBOLS.

The following shall only apply when preformed plastic pavement markings are to be recessed:

Add the following paragraph after the first paragraph of Article 780.07 of the Standard Specifications.

"The markings shall be capable of being applied in a grooved slot on new and existing portland cement concrete and HMA surfaces, by means of a pressure-sensitive, precoated adhesive, or liquid contact cement which shall be applied at the time of installation. A primer sealer shall be applied with a roller and shall cover and seal the entire bottom of the groove. The primer sealer shall be recommended by the manufacturer of the pavement marking material and shall be compatible with the material being used. The Contractor shall install the markings in the groove as soon as possible after the primer sealer cures according to the manufacturer's recommendations. The markings placed in the groove shall be rolled and tamped into the groove with a roller or tamper cart cut to fit the groove and loaded with or weighing at least 200 lb (90kg). Vehicle tires shall not be used for tamping. The Contractor shall roll and tamp the material with a minimum of 6 passes to prevent easy removal or peeling."

HOT MIX ASPHALT – PRIME COAT (BDE)
Effective: November 1, 2014

Revise Note 1 of Article 406.02 of the Standard Specifications to read:

"Note 1. The bituminous material used for prime coat shall be one of the types listed in the following table.

When emulsified asphalts are used, any dilution with water shall be performed by the emulsion producer. The emulsified asphalt shall be thoroughly agitated within 24 hours of application and show no separation of water and emulsion.

Application	Bituminous Material Types
Prime Coat on Brick, Concrete, or HMA Bases	SS-1, SS-1h, SS-1hP, SS-1vh, RS-1, RS-2, CSS-1, CSS-1h, CSS-1hp, CRS-1, CRS-2, HFE-90, RC-70
Prime Coat on Aggregate Bases	MC-30, PEP"

Add the following to Article 406.03 of the Standard Specifications.

"(i) Vacuum Sweeper 1101.19
(j) Spray Paver ..... 1102.06"

Revise Article 406.05(b) of the Standard Specifications to read:

"(b) Prime Coat. The bituminous material shall be prepared according to Article 403.05 and applied according to Article 403.10. The use of RC-70 shall be limited to air temperatures less than 60 °F (15 °C).

(1) Brick, Concrete or HMA Bases. The base shall be cleaned of all dust, debris and any substance that will prevent the prime coat from adhering to the base. Cleaning shall be accomplished by sweeping to remove all large particles and air blasting to remove dust. As an alternative to air blasting, a vacuum sweeper may be used to accomplish the dust removal. The base shall be free of standing water at the time of application. The prime coat shall be applied uniformly and at a rate that will provide a residual asphalt rate on the prepared surface as specified in the following table.

Type of Surface to be Primed	Residual Asphalt Rate lb/sq ft (kg/sq m)
Milled HMA, Aged Non-Milled HMA, Milled Concrete, Non-Milled Concrete & Tined Concrete	0.05 (0.244)
Fog Coat between HMA Lifts, IL-4.75 & Brick	0.025 (0.122)

The bituminous material for the prime coat shall be placed one lane at a time. If a spray paver is not used, the primed lane shall remain closed until the prime coat is fully cured and does not pickup under traffic. When placing prime coat through an intersection where it is not possible to keep the lane closed, the prime coat may be covered immediately following its application with fine aggregate mechanically spread at a uniform rate of 2 to 4 lb/sq yd (1 to 2 kg/sq m).

(2) Aggregate Bases. The prime coat shall be applied uniformly and at a rate that will provide a residual asphalt rate on the prepared surface of 0.25 lb/sq ft ± 0.01 (1.21 kg/sq m ±0.05).

The prime coat shall be permitted to cure until the penetration has been approved by the Engineer, but at no time shall the curing period be less than 24 hours for MC-30 or four hours for PEP. Pools of prime occurring in the depressions shall be broomed or squeegeed over the surrounding surface the same day the prime coat is applied.

The base shall be primed 1/2 width at a time. The prime coat on the second half/width shall not be applied until the prime coat on the first half/width has cured so that it will not pickup under traffic.

The residual asphalt rate will be verified a minimum of once per type of surface to be primed as specified herein for which at least 2000 tons (1800 metric tons) of HMA will be placed. The test will be according to the "Determination of Residual Asphalt in Prime and Tack Coat Materials" test procedure.

Prime coat shall be fully cured prior to placement of HMA to prevent pickup by haul trucks or paving equipment. If pickup occurs, paving shall cease in order to provide additional cure time, and all areas where the pickup occurred shall be repaired.

If after five days, loss of prime coat is evident prior to covering with HMA, additional prime coat shall be placed as determined by the Engineer at no additional cost to the Department."

Revise the last sentence of the first paragraph of Article 406.13(b) of the Standard Specifications to read:

"Water added to emulsified asphalt, as allowed in Article 406.02, will not be included in the quantities measured for payment."

Revise the second paragraph of Article 406.13(b) of the Standard Specifications to read:

"Aggregate for covering prime coat will not be measured for payment."

Revise the first paragraph of Article 406.14 of the Standard Specifications to read:

"**406.14 Basis of Payment.** Prime Coat will be paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIME COAT), or POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT)."

Revise Article 407.02 of the Standard Specifications to read:

"**407.02 Materials.** Materials shall be according to Article 406.02, except as follows.

Item	Article/Section
(a) Packaged Rapid Hardening Mortar or Concrete	1018"

Revise Article 407.06(b) of the Standard Specifications to read:

"(b) A bituminous prime coat shall be applied between each lift of HMA according to Article 406.05(b)."

Delete the second paragraph of Article 407.12 of the Standard Specifications.

Revise the first paragraph of Article 408.04 of the Standard Specifications to read:

"**408.04 Method of Measurement.** Bituminous priming material will be measured for payment according to Article 406.13."

Revise the first paragraph of Article 408.05 of the Standard Specifications to read:

"**408.05 Basis of Payment.** This work will be paid for at the contract unit price per pound (kilogram) of residual asphalt applied for BITUMINOUS MATERIALS (PRIME COAT) or POLYMERIZED BITUMINOUS MATERIALS (PRIME COAT) and at the contract unit price per ton (metric ton) for INCIDENTAL HOT-MIX ASPHALT SURFACING."

Revise Article 1032.02 of the Standard Specifications to read:

"**1032.02 Measurement.** Asphalt binders, emulsified asphalts, rapid curing liquid asphalt, medium curing liquid asphalts, slow curing liquid asphalts, asphalt fillers, and road oils will be measured by weight.

A weight ticket for each truck load shall be furnished to the inspector. The truck shall be weighed at a location approved by the Engineer. The ticket shall show the weight of the empty truck (the truck being weighed each time before it is loaded), the weight of the loaded truck, and the net weight of the bituminous material.

When an emulsion or cutback is used for prime coat, the percentage of asphalt residue of the actual certified product shall be shown on the producer's bill of lading or attached certificate of analysis. If the producer adds extra water to an emulsion at the request of the purchaser, the amount of water shall also be shown on the bill of lading.

Payment will not be made for bituminous materials in excess of 105 percent of the amount specified by the Engineer."

Add the following to the table in Article 1032.04 of the Standard Specifications.

"SS-1vh	160-180	70-80
RS-1, CRS-1	75-130	25-55"

Add the following to Article 1032.06 of the Standard Specifications.

"(g) Non Tracking Emulsified Asphalt SS-1vh shall be according to the following.

Requirements for SS-1vh			
Test		SPEC	AASHTO Test Method
Saybolt Viscosity @ 25C,	SFS	20-200	T 72
Storage Stability, 24hr.,	%	1 max.	T 59
Residue by Evaporation,	%	50 min.	T 59
Sieve Test,	%	0.3 max.	T 59
Tests on Residue from Evaporation			
Penetration @25°C, 100g., 5 sec., dmm		20 max.	T 49
Softening Point,	°C	65 min.	T 53
Solubility,	%	97.5 min.	T 44
Orig. DSR @ 82°C,	kPa	1.00 min.	T 315"

Revise the last table in Article 1032.06(f)(2)d. of the Standard Specifications to read:

"Grade	Use
SS-1, SS-1h, RS-1, RS-2, CSS-1, CRS-1, CRS-2, CSS-1h, HFE-90, SS-1hP, CSS-1hP, SS-1vh	Prime or fog seal
PEP	Bituminous surface treatment prime
RS-2, HFE-90, HFE-150, HFE- 300, CRSP, HFP, CRS-2, HFRS-2	Bituminous surface treatment
CSS-1h Latex Modified	Microsurfacing"

Add the following to Article 1101 of the Standard Specifications.

"**1101.19 Vacuum Sweeper.** The vacuum sweeper shall have a minimum sweeping path of 52 in. (1.3 m) and a minimum blower rating of 20,000 cu ft per minute (566 cu m per minute)."

Add the following to Article 1102 of the Standard Specifications:

"**1102.06 Spray Paver.** The spreading and finishing machine shall be capable of spraying a rapid setting emulsion tack coat, paving a layer of HMA, and providing a smooth HMA mat in one pass. The HMA shall be spread over the tack coat in less than five seconds after the application of the tack coat during normal paving speeds. No wheel or other part of the paving machine shall come into contact with the tack coat before the HMA is applied. In addition to meeting the requirements of Article 1102.03, the spray paver shall also meet the requirements of Article 1102.05 for the tank, heating system, pump, thermometer, tachometer or synchronizer, and calibration. The spray bar shall be equipped with properly sized and spaced nozzles to apply a uniform application of tack coat at the specified rate for the full width of the mat being placed."

LRFD STORM SEWER BURIAL TABLES (BDE)
Effective: November 1, 2013 Revised: November 1, 2014

Revise Article 550.02 of the Standard Specifications to read as follows:

"

Item	Article Section
(a) Clay Sewer Pipe	1040.02
(b) Extra Strength Clay Pipe	1040.02
(c) Concrete Sewer, Storm Drain, and Culvert Pipe	1042
(d) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe	1042
(e) Reinforced Concrete Elliptical Culvert, Storm Drain,and Sewer Pipe (Note 1)	1042
(f) Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe (Note 1)	1042
(g) Polyvinyl Chloride (PVC) Pipe	1040.03
(h) Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior	1040.03
(i) Corrugated Polypropylene (CPP) Pipe with Smooth Interior	1040.07
(j) Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe	1056
(k) Mastic Joint Sealer for Pipe	1055
(l) External Sealing Band	1057
(m) Fine Aggregate (Note 2)	1003.04
(n) Coarse Aggregate (Note 3)	1004.05
(o) Reinforcement Bars and Welded Wire Fabric	1006.10
(p) Handling Hole Plugs	1042.16
(q) Polyethylene (PE) Pipe with a Smooth Interior	1040.04
(r) Corrugated Polyethylene (PE) Pipe with a Smooth Interior	1040.04

Note 1. The class of elliptical and arch pipe used for various storm sewer sizes and heights of fill shall conform to the requirements for circular pipe.

Note 2. The fine aggregate shall be moist.

Note 3. The coarse aggregate shall be wet."

Revise the table for permitted materials in Article 550.03 of the Standard Specifications as follows:

"Class	**Materials**
A	Rigid Pipes: Clay Sewer Pipe Extra Strength Clay Pipe Concrete Sewer, Storm Drain, and Culvert Pipe Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
B	Rigid Pipes: Clay Sewer Pipe Extra Strength Clay Pipe Concrete Sewer, Storm Drain, and Culvert Pipe Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe Flexible Pipes: Polyvinyl Chloride (PVC) Pipe Corrugated Polyvinyl Chloride Pipe (PVC) with a Smooth Interior Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polyethylene (PE) Pipe with a Smooth Interior Corrugated Polypropylene (CPP) Pipe with a Smooth Interior"

Replace the storm sewers tables in Article 550.03 of the Standard Specifications with the following:

STORM SEWERS
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED
FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE

Nominal Diameter in.	Type 1								Type 2							
	Fill Height: 3' and less With 1' minimum cover								Fill Height: Greater than 3' not exceeding 10'							
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP
10	NA	3	X	X	X	X	X	NA	NA	1	*X	X	X	X	X	NA
12	IV	NA	X	X	X	X	X	X	II	1	*X	X	X	X	X	X
15	IV	NA	NA	X	X	NA	X	X	II	1	*X	X	X	NA	X	X
18	IV	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
21	III	NA	NA	X	X	NA	NA	NA	II	2	X	X	X	NA	NA	NA
24	III	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
27	III	NA	NA	NA	NA	NA	NA	NA	II	3	X	NA	NA	NA	NA	NA
30	IV	NA	NA	X	X	X	X	X	II	3	X	X	X	X	X	X
33	III	NA	NA	NA	NA	NA	NA	NA	II	NA	X	NA	NA	NA	NA	NA
36	III	NA	NA	X	X	X	X	X	II	NA	X	X	X	X	NAX	X
42	II	NA	X	X	NA	X	X	NA	II	NA	X	X	NA	X	NA	NA
48	II	NA	X	X	NA	X	X	X	II	NA	X	X	NA	X	NA	NA
54	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
60	II	NA	NA	NA	NA	NA	NA	X	II	NA	NA	NA	NA	NA	NA	X
66	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
72	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
78	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
84	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
90	II	NA	NA	NA	NA	NA	NA	NA	IIII	NA	NA	NA	NA	NA	NA	NA
96	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
102	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
108	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
CSP Concrete Sewer, Storm drain, and Culvert Pipe
PVC Polyvinyl Chloride Pipe
CPVC Corrugated Polyvinyl Chloride Pipe
ESCP Extra Strength Clay Pipe
PE Polyethylene Pipe with a Smooth Interior
CPE Corrugated Polyethylene Pipe with a Smooth Interior
CPP Corrugated Polypropylene pipe with a Smooth Interior

X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
* May also use Standard Strength Clay Pipe

STORM SEWERS (Metric)
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED
FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE

Nominal Diameter in.	Type 1								Type 2							
	Fill Height: 1 m and less With 300 mm minimum cover								Fill Height: Greater than 1 m not exceeding 3 m							
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP
250	NA	3	X	X	X	X	X	NA	NA	1	*X	X	X	X	X	NA
300	IV	NA	X	X	X	X	X	X	II	1	*X	X	X	X	X	X
375	IV	NA	NA	X	X	NA	X	X	II	1	*X	X	X	NA	X	X
450	IV	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
525	III	NA	NA	X	X	NA	NA	NA	II	2	X	X	X	NA	NA	NA
600	III	NA	NA	X	X	X	X	X	II	2	X	X	X	X	X	X
675	III	NA	NA	NA	NA	NA	NA	NA	II	3	X	NA	NA	NA	NA	NA
750	IV	NA	NA	X	X	X	X	X	II	3	X	X	X	X	X	X
825	III	NA	NA	NA	NA	NA	NA	NA	II	NA	X	NA	NA	NA	NA	NA
900	III	NA	NA	X	X	X	X	X	II	NA	X	X	X	X	NAX	X
1050	II	NA	X	X	NA	X	X	NA	II	NA	X	X	NA	X	NA	NA
1200	II	NA	X	X	NA	X	X	X	II	NA	X	X	NA	X	NA	NA
1350	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
1500	II	NA	NA	NA	NA	NA	NA	X	II	NA	NA	NA	NA	NA	NA	X
1650	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
1800	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
1950	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
2100	II	NA	NA	NA	NA	NA	NA	NA	II	NA	NA	NA	NA	NA	NA	NA
2250	II	NA	NA	NA	NA	NA	NA	NA	IIII	NA	NA	NA	NA	NA	NA	NA
2400	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
2550	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA
2700	II	NA	NA	NA	NA	NA	NA	NA	III	NA	NA	NA	NA	NA	NA	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
CSP Concrete Sewer, Storm drain, and Culvert Pipe
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CPVC Corrugated Polyvinyl Chloride Pipe
ESCP Extra Strength Clay Pipe
PE Polyethylene Pipe with a Smooth Interior
CPE Corrugated Polyethylene Pipe with a Smooth Interior
CPP Corrugated Polypropylene pipe with a Smooth Interior
X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
* May also use Standard Strength Clay Pipe

STORM SEWERS
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED
FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE

Nominal Diameter in.	Type 3								Type 4						
	Fill Height: Greater than 10' not exceeding 15'								Fill Height: Greater than 15' not exceeding 20'						
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPP
10	NA	2	X	X	X	X	X	NA	NA	3	X	X	X	X	NA
12	III	2	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
15	III	3	X	X	X	NA	NA	X	IV	NA	NA	X	X	NA	X
18	III	NA	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
21	III	NA	NA	X	X	NA	NA	NA	IV	NA	NA	X	X	NA	NA
24	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
27	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
30	III	NA	NA	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
33	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
36	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
42	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
48	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
54	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
60	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
66	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
72	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
78	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
84	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
90	III	NA	NA	NA	NA	NA	NA	NA	1680	NA	NA	NA	NA	NA	NA
96	III	NA	NA	NA	NA	NA	NA	NA	1690	NA	NA	NA	NA	NA	NA
102	IVIII	NA	NA	NA	NA	NA	NA	NA	1700	NA	NA	NA	NA	NA	NA
108	1360	NA	NA	NA	NA	NA	NA	NA	1710	NA	NA	NA	NA	NA	NA

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X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
* May also use Standard Strength Clay Pipe
Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the D-load to produce a 0.01 in crack.

STORM SEWERS (metric)
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED
FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE

Nominal Diameter in.	Type 3								Type 4						
	Fill Height: Greater than 3 m not exceeding 4.5 m								Fill Height: Greater than 4.5 m not exceeding 6 m						
	RCCP	CSP	ESCP	PVC	CPVC	PE	CPE	CPP	RCCP	CSP	ESCP	PVC	CPVC	PE	CPP
250	NA	2	X	X	X	X	X	NA	NA	3	X	X	X	X	NA
300	III	2	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
375	III	3	X	X	X	NA	NA	X	IV	NA	NA	X	X	NA	X
450	III	NA	X	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
525	III	NA	NA	X	X	NA	NA	NA	IV	NA	NA	X	X	NA	NA
600	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
675	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
750	III	NA	NA	X	X	X	NA	X	IV	NA	NA	X	X	X	NA
825	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
900	III	NA	NA	X	X	X	NA	NA	IV	NA	NA	X	X	X	NA
1050	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
1200	III	NA	NA	X	NA	X	NA	NA	IV	NA	NA	X	NA	X	NA
1350	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1500	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1650	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1800	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
1950	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
2100	III	NA	NA	NA	NA	NA	NA	NA	IV	NA	NA	NA	NA	NA	NA
2250	III	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA
2400	III	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA
2550	IVIII	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA
2700	70	NA	NA	NA	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA

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CPP Corrugated Polypropylene pipe with a Smooth Interior
X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
* May also use Standard Strength Clay Pipe
Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the metric D-load to produce a 25.4 micro-meter crack.

STORM SEWERS
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED
FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE

Nominal Diameter in.	Type 5			Type 6			Type 7	
	Fill Height: Greater than 20' not exceeding 25'			Fill Height: Greater than 25' not exceeding 30'			Fill Height: Greater than 30' not exceeding 35'	
	RCCP	PVC	CPVC	RCCP	PVC	CPVC	RCCP	CPVC
10	NA	X	X	NA	X	X	NA	X
12	IV	X	X	V	X	X	V	X
15	IV	X	X	V	X	X	V	X
18	IV	X	X	V	X	X	V	X
21	IV	X	X	V	X	X	V	X
24	IV	X	X	V	X	X	V	X
27	IV	NA	NA	V	NA	NA	V	NA
30	IV	X	X	V	X	X	V	X
33	IV	NA	NA	V	NA	NA	V	NA
36	IV	X	X	V	X	X	V	X
42	IV	X	NA	V	X	NA	V	NA
48	IV	X	NA	V	X	NA	V	NA
54	IV	NA	NA	V	NA	NA	V	NA
60	IV	NA	NA	V	NA	NA	V	NA
66	IV	NA	NA	V	NA	NA	V	NA
72	V	NA	NA	V	NA	NA	V	NA
78	2020	NA	NA	2370	NA	NA	2730	NA
84	2020	NA	NA	2380	NA	NA	2740	NA
90	2030	NA	NA	2390	NA	NA	2750	NA
96	2040	NA	NA	2400	NA	NA	2750	NA
102	2050	NA	NA	2410	NA	NA	2760	NA
108	2060	NA	NA	2410	NA	NA	2770	NA

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X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the D-load to produce a 0.01 in crack.

STORM SEWERS (metric)
KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED
FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE

Nominal Diameter in.	Type 5			Type 6			Type 7	
	Fill Height: Greater than 20' not exceeding 25'			Fill Height: Greater than 25' not exceeding 30'			Fill Height: Greater than 30' not exceeding 35'	
	RCCP	PVC	CPVC	RCCP	PVC	CPVC	RCCP	CPVC
250	NA	X	X	NA	X	X	NA	X
300	IV	X	X	V	X	X	V	X
375	IV	X	X	V	X	X	V	X
450	IV	X	X	V	X	X	V	X
525	IV	X	X	V	X	X	V	X
600	IV	X	X	V	X	X	V	X
675	IV	NA	NA	V	NA	NA	V	NA
750	IV	X	X	V	X	X	V	X
825	IV	NA	NA	V	NA	NA	V	NA
900	IV	X	X	V	X	X	V	X
1050	IV	X	NA	V	X	NA	V	NA
1200	IV	X	NA	V	X	NA	V	NA
1350	IV	NA	NA	V	NA	NA	V	NA
1500	IV	NA	NA	V	NA	NA	V	NA
1650	IV	NA	NA	V	NA	NA	V	NA
1800	V	NA	NA	V	NA	NA	V	NA
1950	100	NA	NA	110	NA	NA	130	NA
2100	100	NA	NA	110	NA	NA	130	NA
2250	100	NA	NA	110	NA	NA	130	NA
2400	100	NA	NA	120	NA	NA	130	NA
2550	100	NA	NA	120	NA	NA	130	NA
2700	100	NA	NA	120	NA	NA	130	NA

RCCP Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
PVC Polyvinyl Chloride Pipe
CPVC Corrugated Polyvinyl Chloride Pipe
ESCP Extra Strength Clay Pipe
X This material may be used for the given pipe diameter and fill height.
NA This material is Not Acceptable for the given pipe diameter and fill height.
Note RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the metric D-load to produce a 25.4 micro-meter crack.

Revise the sixth paragraph of Article 550.06 of the Standard Specifications to read:

"PVC, PE and CPP pipes shall be joined according to the manufacturer's specifications."

Revise the first and second paragraphs of Article 550.08 of the Standard Specifications to read:

"**550.08 Deflection Testing for Storm Sewers.** All PVC, PE, and CPP storm sewers shall be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted. The testing shall be performed in the presence of the Engineer.

For PVC, PE, and CPP storm sewers with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC, PE, and CPP storm sewers with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel shall be used."

Revise the fifth paragraph of Article 550.08 to read as follows.

"The outside diameter of the mandrel shall be 95 percent of the base inside diameter. For all PVC pipe the base inside diameter shall be defined using ASTM D 3034 methodology. For all PE and CPP pipe, the base inside diameter shall be defined as the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications."

Revise the first paragraph of Article 1040.03 of the Standard Specifications to read:

"**1040.03 Polyvinyl Chloride (PVC) Pipe.** Acceptance testing of PVC pipe and fittings shall be accomplished during the same construction season in which they are installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements."

Delete Articles 1040.03(e) and (f) of the Standard Specifications.

Revise Articles 1040.04(c) and (d) of the Standard Specifications to read:

"(c) PE Profile Wall Pipe for Insertion Lining. The pipe shall be according to ASTM F 894. When used for insertion lining of pipe culverts, the pipe liner shall have a minimum pipe stiffness of 46 psi (317 kPa) at five percent deflection for nominal inside diameters of 42 in. (1050 mm) or less. For nominal inside diameters of greater than 42 in. (1050 mm), the pipe liner shall have a minimum pipe stiffness of 32.5 psi (225 kPa) at five percent deflection. All sizes shall have wall construction that presents essentially smooth internal and external surfaces.

(d) PE Pipe with a Smooth Interior. The pipe shall be according to ASTM F 714 (DR 32.5) with a minimum cell classification of PE 335434 as defined in ASTM D 3350. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties and the resin used to manufacture the pipe meets or exceeds the minimum cell classification requirements."

Add the following to Section 1040 of the Standard Specifications:

"**1040.08 Polypropylene (PP) Pipe.** Storage and handling shall be according to the manufacturer's recommendations, except in no case shall the pipe be exposed to direct sunlight for more than six months. Acceptance testing of the pipe shall be accomplished during the same construction season in which it is installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.

(a) Corrugated PP Pipe with a Smooth Interior. The pipe shall be according to AAHSTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type S or D.

(b) Perforated Corrugated PP Pipe with A Smooth Interior. The pipe shall be according to AASHTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type SP. In addition, the top centerline of the pipe shall be marked so that it is readily visible from the top of the trench before backfilling, and the upper ends of the slot perforations shall be a minimum of ten degrees below the horizontal."

MECHANICAL SIDE TIE BAR INSERTER (BDE)
Effective: August 1, 2014 Revised: January 1, 2015

Add the following to Article 420.03 of the Standard Specifications:

"(k) Mechanical Side Tie Bar Inserters .....1103.18"

Revise Article 420.05(b) of the Standard Specifications to read:

"(b) Longitudinal Construction Joint. The tie bars shall be installed using one of the following methods.

(1) Preformed or Drilled Holes. The tie bars shall be installed with an approved nonshrink grout or chemical adhesive providing a minimum pull-out strength as follows.

Bar Size	Minimum Pull-Out Strength
No. 6 (No. 19)	11,000 lb (49 kN)
No. 8 (No. 25)	19,750 lb (88 kN)

Holes shall be blown clean and dry prior to placing the grout or adhesive. If compressed air is used, the pneumatic tool lubricator shall be bypassed and a filter installed on the discharge valve to keep water and oil out of the lines. The installation shall be with methods and tools conforming to the grout or adhesive manufacturer's recommendations.

The Contractor shall load test five percent of the first 500 tie bars installed. No further installation will be allowed until the initial five percent testing has been completed and approval to continue installation has been given by the Engineer. Testing will be required for 0.5 percent of the bars installed after the initial 500. For each bar that fails to pass the minimum requirements, two more bars selected by the Engineer shall be tested. Each bar that fails to meet the minimum load requirement shall be reinstalled and retested. The equipment and method used for testing shall meet the requirements of ASTM E 488. All tests shall be performed within 72 hours of installation. The tie bars shall be installed and approved before concrete is placed in the adjacent lane."

(2) Inserted. The tie bars shall be installed with the use of a mechanical side tie bar inserter. The tie bars shall be No. 6 (No. 19) bars, 30 inches (750 mm) long, placed mid-depth on 24 in. (600 mm) centers along the joint edge. The inserter shall insert the tie bars with vibration while still within the extrusion process, after the concrete has been struck off and consolidated without deformation of the slab. The inserter shall remain stationary relative to the pavement when inserting tie bars, while the formless paver continues to move in the direction of paving.

A void greater than 1/8 in. (3 mm) at any location around the tie bar shall require immediate adjustment of the paving operation. A void greater than 1/2 in.(13 mm) shall be repaired with a nonshrink grout or chemical adhesive after the concrete has hardened. If at the end of the day of paving more than 20 percent of the tie bars show a void larger than 1/8 in. (3 mm) at any point around the bar, the use of the side tie bar inserter shall be discontinued.

(3) Formed in Place. The tie bar shall be formed in place as shown on the plans.

The sealant reservoir shall be formed either by sawing after the concrete has set according to Article 420.05(a) or by hand tools when the concrete is in a plastic state."

Add the following to Section 1103 of the Standard Specifications:

"**1103.18 Mechanical Side Bar Inserters.** The mechanical side tie bar inserter shall be self-contained and supported on the formless paver with the ability to move independently from the formless paver. The insertion apparatus shall vibrate within a frequency of 2000 to 6000 vpm. A vibrating reed tachometer, hand type, shall be provided according to Article 1103.12."

PAVED SHOULDER REMOVAL (BDE)
Effective: April 1, 2014

Revise the first paragraph of Article 440.07(b) of the Standard Specifications to read:

"(b) Measured Quantities. Pavement removal, driveway pavement removal, and paved shoulder removal will be measured for payment in place and the area computed in square yards (square meters)."

Revise Article 440.07(c) of the Standard Specifications to read:

"(c) Adjustment of Quantities. The quantity of pavement removal and paved shoulder removal will be adjusted if their respective thickness varies more than 15 percent from that shown on the plans. The quantity will be either increased or decreased according to the following table.

% change of thickness	% change of quantity
0 to less than 15	0
15 to less than 20	10
20 to less than 30	15
30 to less than 50	20

If the thickness of the existing pavement varies by 50 percent or more from that shown on the plans, the character of the work will be considered significantly changed and an adjustment to the contract will be made according to Article 104.02.

When an adjustment is made for variations in pavement or shoulder thickness a resulting adjustment will also be made in the earthwork quantities when applicable.

No adjustment will be made for variations in the amount of reinforcement."

PAVEMENT MARKING BLACKOUT TAPE (BDE)
Effective: November 1, 2014

Revise the fourth paragraph of Article 701.04 of the Standard Specifications to read:

"The traffic control shall remain in place only as long as needed and shall be removed when directed by the Engineer. Signs that do not apply to current conditions shall be removed, covered, or turned from the view of motorists. All existing pavement markings which conflict with the revised traffic pattern shall be removed according to Section 783 or when specified, temporarily covered with pavement marking blackout tape. The width of blackout tape shall be at least 1 in. (25 mm) wider than the width of the pavement marking being covered. The removing or covering of existing markings shall be scheduled immediately to facilitate the revised traffic pattern. If darkness or inclement weather prohibits the removal or covering operations, such operations shall be resumed the next morning or when weather permits."

Revise Article 701.19(f) of the Standard Specifications to read:

"(f) Removal of existing pavement markings and raised reflective pavement markers will be measured for payment according to Article 783.05. Temporary covering of existing pavement markings with blackout tape will be measured for payment in feet (meters) in place. Removal of blackout tape will be measured for payment in square feet (square meters)."

Revise Article 701.20(j) of the Standard Specifications to read:

"(j) Removal of existing pavement markings and raised reflective pavement markers will be paid for according to Article 783.06. Temporary covering of existing pavement markings with blackout tape will be paid for at the contract unit price per foot for PAVEMENT MARKING BLACKOUT TAPE, of the line width specified." Removal of blackout tape will be paid for as work zone pavement marking removal according to Article 703.07."

Revise the first two paragraphs of Article 1095.06 of the Standard Specifications to read:

"**1095.06 Pavement Marking Tape.** White or yellow marking tape shall consist of glass spheres of high optical quality embedded into a binder on a suitable backing that is precoated with a pressure sensitive adhesive. The spheres shall be of uniform gradation and distributed evenly over the surface of the tape. Blackout marking tape shall be a Type III tape consisting of a matte black, non-reflective, patterned surface that is precoated with a pressure sensitive adhesive. The surface of the blackout pavement marking tape shall provide a minimum skid resistance value of 45 BPN when tested according to ASTM E 303-74.

The material shall be white, yellow, or matte black as specified. White and yellow colors shall conform closely to Federal color tolerances for pavement marking paint."

Revise the second table of Article 1095.06 to read:

"Test	Type I		Type III		
	White	Yellow	White	Yellow	Blackout
Initial Thickness, mils (mm)	20 (0.51)	20 (0.51)	20 (0.51)	20 (0.51)	65 (1.65) 1/ 10 (0.25) 2/
Durability (cycles)	5,000	5,000	1,500	1,500	1,500

Notes:
1/ Measured at the thickest point of the patterned surface.
2/ Measured at the thinnest point of the patterned surface."

PAVEMENT PATCHING (BDE)
Effective: January 1, 2010

Revise the first sentence of the second paragraph of Article 701.17(e)(1) of the Standard Specifications to read:

"In addition to the traffic control and protection shown elsewhere in the contract for pavement, two devices shall be placed immediately in front of each open patch, open hole, and broken pavement where temporary concrete barriers are not used to separate traffic from the work area."

PAVEMENT STRIPING - SYMBOLS (BDE)
Effective: January 1, 2015

Revise the Symbol Table of Article 780.14 of the Supplemental Specifications to read:

"SYMBOLS

Symbol	Large Size sq ft (sq m)	Small Size sq ft (sq m)
Through Arrow	11.5 (1.07)	6.5 (0.60)
Left or Right Arrow	15.6 (1.47)	8.8 (0.82)
2 Arrow Combination Left (or Right) and Through	26.0 (2.42)	14.7 (1.37)
3 Arrow Combination Left, Right, and Through	38.4 (3.56)	20.9 (1.94)
Lane Drop Arrow	41.5 (3.86)	--
Wrong Way Arrow	24.3 (2.26)	--
Railroad "R" 6 ft (1.8 m)	3.6 (0.33)	--
Railroad "X" 20 ft (6.1 m)	54.0 (5.02)	--
International Symbol of Accessibility	3.1 (0.29)	--
Bike Symbol	4.7 (0.44)	--
Shared Lane Symbol	8.0 (0.74)	--"

PRECAST CONCRETE HANDHOLE (BDE)
Effective: August 1, 2014

Revise the third paragraph of Article 814.03 of the Standard Specifications to read:

"Handholes shall be constructed as shown on the plans and shall be cast-in-place, composite concrete, or precast units. Heavy duty handholes shall be either cast-in-place or precast units."

Add the following to Article 814.03 of the Standard Specifications:

"(c) Precast Concrete. Precast concrete handholes shall be fabricated according to Article 1042.17. Where a handhole is contiguous to a sidewalk, preformed joint filler of 1/2 inch (13 mm) thickness shall be placed between the handhole and the sidewalk."

Add the following to Section1042 of the Standard Specifications:

"**1042.17 Precast Concrete Handholes.** Precast concrete handholes shall be according to Articles 1042.03(a)(c)(d)(e)."

PROGRESS PAYMENTS (BDE)
Effective: November 2, 2013

Revise Article 109.07(a) of the Standard Specifications to read:

"(a) Progress Payments. At least once each month, the Engineer will make a written estimate of the quantity of work performed in accordance with the contract, and the value thereof at the contract unit prices. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than $1000.00 will be approved for payment other than the final payment.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics' Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610), progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved."

RETROREFLECTIVE SHEETING FOR HIGHWAY SIGNS (BDE)
Effective: November 1, 2014

Revise the first sentence of the first paragraph of Article 1091.03(a)(3) of the Standard Specifications to read:

"When tested according to ASTM E 810, with averaging, the sheeting shall have a minimum coefficient of retroreflection as show in the following tables."

Replace the Tables for Type AA sheeting, Type AP sheeting, Type AZ sheeting and Type ZZ sheeting in Article 1091.03(a)(3) with the following.

Type AA Sheeting
Minimum Coefficient of Retroreflection
Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type AA (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	FO
0.2	-4	800	600	120	80	40	200
0.2	+30	400	300	60	35	20	100
0.5	-4	200	150	30	20	10	75
0.5	+30	100	75	15	10	5	35

Type AA (45 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	Yellow	FO
0.2	-4	500	165
0.2	+30	115	40
0.5	-4	140	65
0.5	+30	60	30

Type AP Sheeting
Minimum Coefficient of Retroreflection
Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type AP (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	Brown	FO
0.2	-4	500	380	75	55	35	25	150
0.2	+30	180	135	30	20	15	10	55
0.5	-4	300	225	50	30	20	15	90
0.5	+30	90	70	15	10	7.5	5	30

Type AZ Sheeting
Minimum Coefficient of Retroreflection
Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type AZ (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	FYG	FY
0.2	-4	375	280	75	45	25	300	230
0.2	+30	235	170	40	25	15	190	150
0.5	-4	245	180	50	30	20	200	155
0.5	+30	135	100	25	15	10	100	75
1.0	-4	50	37.5	8.5	5	2	45	25
1.0	+30	22.5	20	5	3	1	25	12.5

Type ZZ Sheeting
Minimum Coefficient of Retroreflection
Candelas/foot candle/sq ft (candelas/lux/sq m) of material

Type ZZ (Average of 0 and 90 degree rotation)

Observation Angle (deg.)	Entrance Angle (deg.)	White	Yellow	Red	Green	Blue	FYG	FY	FO
0.2	-4	570	425	90	60	30	460	340	170
0.2	+30	190	140	35	20	10	150	110	65
0.5	-4	400	300	60	40	20	320	240	120
0.5	+30	130	95	20	15	7	100	80	45
1.0	-4	115	90	17	12	5	95	70	35
1.0	+30	45	35	7	5	2	35	25	15

REINFORCEMENT BARS (BDE)
Effective: November 1, 2013

Revise the first and second paragraphs of Article 508.05 of the Standard Specifications to read:

"**508.05 Placing and Securing.** All reinforcement bars shall be placed and tied securely at the locations and in the configuration shown on the plans prior to the placement of concrete. Manual welding of reinforcement may only be permitted or precast concrete products as indicated in the current Bureau of Materials and Physical Research Policy Memorandum "Quality Control / Quality Assurance Program for Precast Concrete Products", and for precast prestressed concrete products as indicated in the Department's current "Manual for Fabrication of Precast Prestressed Concrete Products". Reinforcement bars shall not be placed by sticking or floating into place or immediately after placement of the concrete.

Bars shall be tied at all intersections, except where the center to center dimension is less than 1 ft (300 mm) in each direction, in which case alternate intersections shall be tied. Molded plastic clips may be used in lieu of wire to secure bar intersections, but shall not be permitted in horizontal bar mats subject to construction foot traffic or to secure longitudinal bar laps. Plastic clips shall adequately secure the reinforcement bars, and shall permit the concrete to flow through and fully encase the reinforcement. Plastic clips may be recycled plastic, and shall meet the approval of the Engineer. The number of ties as specified shall be doubled for lap splices at the stage construction line of concrete bridge decks when traffic is allowed on the first completed stage during the pouring of the second stage."

Revise the fifth paragraph of Article 508.05 of the Standard Specifications to read:

"Supports for reinforcement in bridge decks shall be metal. For all other concrete construction the supports shall be metal or plastic. Metal bar supports shall be made of cold-drawn wire, or other approved material and shall be either epoxy coated, galvanized or plastic tipped. When the reinforcement bars are epoxy coated, the metal supports shall be epoxy coated. Plastic supports may be recycled plastic. Supports shall be provided in sufficient number and spaced to provide the required clearances. Supports shall adequately support the reinforcement bars, and shall permit the concrete to flow through and fully encase the reinforcement. The legs of supports shall be spaced to allow an opening that is a minimum 1.33 times the nominal maximum aggregate size used in the concrete. Nominal maximum aggregate size is defined as the largest sieve which retains any of the aggregate sample particles. All supports shall meet the approval of the Engineer."

Revise the first sentence of the eighth paragraph of Article 508.05 of the Standard Specifications to read:

"Epoxy coated reinforcement bars shall be tied with plastic coated wire, epoxy coated wire, or molded plastic clips where allowed."

Add the following sentence to the end of the first paragraph of Article 508.06(c) of the Standard Specifications:

"In addition, the total slip of the bars within the splice sleeve of the connector after loading in tension to 30 ksi (207 MPa) and relaxing to 3 ksi (20.7 MPa) shall not exceed 0.01 in. (254 microns)."

Revise Article 1042.03(d) of the Standard Specifications to read:

"(d) Reinforcement and Accessories: The concrete cover over all reinforcement shall be within ±1/4 in. (±6 mm) of the specified cover.

Welded wire fabric shall be accurately bent and tied in place.

Miscellaneous accessories to be cast into the concrete or for forming holes and recesses shall be carefully located and rigidly held in place by bolts, clamps, or other effective means. If paper tubes are used for vertical dowel holes, or other vertical holes which require grouting, they shall be removed before transportation to the construction site."

RIGID METAL CONDUIT (BDE)
Effective: August 1, 2014

Add the following to Article 1088.01(a) of the Standard Specifications:

"(6) Stainless Steel Conduit. The conduit shall be Type 304 or Type 316 stainless steel, shall be manufactured according to UL Standard 6A, and shall meet ANSI Standard C80.1. Conduit fittings shall be Type 304 or Type 316 stainless steel and shall be manufactured according to UL Standard 514B.

All conduit supports, straps, clamps. And other attachments shall be Type 304 or Type 316 stainless steel. Attachment hardware shall be stainless steel according to Article 1006.31."

SIDEWALK, CORNER, OR CROSSWALK CLOSURE (BDE)
Effective: January 1, 2015

Revise the first sentence of Article 1106.02(m) of the Supplemental Specifications to read:

"The top and bottom panels shall have alternating white and orange stripes sloping 45 degrees on both sides."

SPEED DISPLAY TRAILER (BDE)
Effective: April 2, 2014

Add the following to Article 701.15(l) of the Standard Specifications:

"(l) Speed Display Trailer. A speed display trailer shall be utilized on freeways and expressways as part of Highway Standard 701400. The trailer shall be placed on the right hand side of the roadway adjacent to, or within 100 ft (30 m) beyond, the first work zone speed limit sign.

Whenever the speed display trailer is not in use, it shall be considered non-operating equipment and shall be stored according to Article 701.11."

Add the following to Article 701.20 of the Standard Specifications:

"(k) Speed Display Trailer will be paid for at the contract unit price per calendar month or fraction thereof for each trailer as SPEED DISPLAY TRAILER."

Add the following to Article 1106.02 of the Standard Specifications:

"(o) Speed Display Trailer. The speed display trailer shall consist of a LED speed indicator display with self-contained, one-direction radar mounted on an orange see-through trailer. The height of the display and radar shall be such that it will function and be visible when located behind concrete barrier.

The speed measurement shall be by radar and provide a minimum detection distance of 1000 ft (300 m). The radar shall have an accuracy of ±1 mile per hour.

The speed indicator display shall face approaching traffic and shall have a sign legend of "YOUR SPEED" immediately above or below the speed display. The digital speed display shall show two digits (00 to 99) in mph. The color of the changeable message legend shall be a yellow legend on a black background. The minimum height of the numerals shall be 18 in. (450 mm), and the nominal legibility distance shall be at least 750 ft (250 m).

The speed indicator display shall be equipped with a violation alert that flashes the displayed detected speed when the posted limit is exceeded. The speed indicator shall have a maximum speed cutoff. The display shall include automatic dimming for nighttime operation.

The speed indicator measurement and display functions shall be equipped with the power supply capable of providing 24 hours of uninterrupted service."

TEMPORARY CONCRETE BARRIER (BDE)
Effective: January 1, 2015

Revise Article 704.02 of the Standard Specifications to read:

"**704.02 Materials.** Materials shall be according to the following.

Item	Article/Section
(a) Precast Temporary Concrete Barrier	1042
(b) Reinforcement Bars (Note 1)	1006.10(a)
(c) Connecting Pins and Anchor Pins (Note 2)	
(d) Connecting Loop Bars (Note 3)	
(e) Packaged Rapid Hardening Mortar or Concrete	1018

Note 1. Reinforcement bars shall be Grade 60 (Grade 400).

Note 2. Connecting Pins and Anchor Pins shall be according to the requirements of ASTM F 1554 Grade 36 (Grade 250).

Note 3. Connecting loop bars shall be smooth bars according to the requirements of ASTM A 36 (A 36M)."

Revise Article 704.04 of the Standard Specifications to read:

"**704.04 Installation.** The barriers shall be seated on bare, clean pavement or paved shoulder and connected together in a smooth, continuous line at the locations provided by the Engineer.

Except on bridge decks, or where alternate anchoring details are shown on the plans, the barrier unit at each end of an installation shall be anchored to the pavement or paved shoulder using six anchor pins and protected with an impact attenuator as shown on the plans. When pinning of additional barrier units within the installation is specified, three anchor pins shall be installed in the traffic side holes of the required barriers.

Where both pinned and unpinned barrier units are used in a continuous installation, a transition shall be provided between them. The transition from pinned to unpinned barrier shall consist of two anchor pins installed in the end holes on the traffic side of the first barrier beyond the pinned section and one anchor pin installed in the middle hole on the traffic side of the second barrier beyond the pinned section. The third barrier beyond the pinned section shall then be unpinned.

Barriers located on bridge decks shall be restrained as shown in the plans. Anchor pins shall not be installed through bridge decks.

Barriers or attachments damaged during transportation or handling, or by traffic during the life of the installation, shall be repaired or replaced. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The barriers shall be removed when no longer required by the contract. After removal, all anchor holes in the pavement or paved shoulder shall be filled with a rapid hardening mortar or concrete. Only enough water to permit placement and consolidation by rodding shall be used and the material shall be struck-off flush."

Add the following after the first paragraph of Article 704.05 of the Standard Specifications:

"Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be measured for payment as each, per anchor pin installed."

Add the following after the second paragraph of Article 704.06 of the Standard Specifications:

"Anchor pins, except for the six anchor pins for the barrier unit at each end of an installation, will be paid for at the contract unit price per each for PINNING TEMPORARY CONCRETE BARRIER."

TRACKING THE USE OF PESTICIDES (BDE)
Effective: August 1, 2012

Add the following paragraph after the first paragraph of Article 107.23 of the Standard Specifications:

"Within 48 hours of the application of pesticides, including but not limited to herbicides, insecticides, algaecides, and fungicides, the Contractor shall complete and return to the Engineer, Operations form "OPER 2720"."

TRAFFIC BARRIER TERMINALS TYPE 6 OR 6B (BDE)
Effective: January 1, 2015

Add the following to the Article 631.02 of the Standard Specifications:

"(h) Chemical Adhesive .....1027.01"

TRAINING SPECIAL PROVISIONS (BDE)
Effective: October 15, 1975

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 **8**. 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 then 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 shall 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.

IDOT TRAINING PROGRAM GRADUATE ON-THE-JOB TRAINING SPECIAL PROVISION (TPG)

Effective: August 1, 2012 Revised: February 1, 2014

In addition to the Contractor's equal employment opportunity affirmative action efforts undertaken as elsewhere required by this Contract, the Contractor is encouraged to participate in the incentive program to provide additional on-the-job training to certified graduates of IDOT funded pre-apprenticeship training programs outlined by this Special Provision.

It is the policy of IDOT to fund IDOT pre-apprenticeship training programs throughout Illinois to provide training and skill-improvement opportunities to assure the increased participation of minority groups, disadvantaged persons and women in all phases of the highway construction industry. The intent of this IDOT Training Program Graduate (TPG) Special Provision is to place certified graduates of these IDOT funded pre-apprentice training programs on IDOT project sites when feasible, and provide the graduates with meaningful on-the-job training intended to lead to journey-level employment. IDOT and its sub-recipients, in carrying out the responsibilities of a state contract, shall determine which construction contracts shall include "Training Program Graduate Special Provisions." To benefit from the incentives to encourage the participation in the additional on-the-job training under this Training Program Graduate Special Provision, the Contractor shall make every reasonable effort to employ certified graduates of IDOT funded Pre-apprenticeship Training Programs to the extent such persons are available within a reasonable recruitment area.

Participation pursuant to IDOT's requirements by the Contractor or subcontractor in this Training Program Graduate (TPG) Special Provision entitles the Contractor or subcontractor to be reimbursed at $15.00 per hour for training given a certified TPG on this contract. As approved by the Department, reimbursement will be made for training persons as specified herein. This reimbursement will be made even though the Contractor or subcontractor may receive additional training program funds from other sources for other trainees, provided such other source does not specifically prohibit the Contractor or subcontractor from receiving other reimbursement. For purposes of this Special Provision the Contractor is not relieved of requirements under applicable federal law, the Illinois Prevailing Wage Act, and is not eligible for other training fund reimbursements in addition to the Training Program Graduate (TPG) Special Provision reimbursement.

No payment shall be made to the Contractor if the Contractor or subcontractor fails to provide the required training. It is normally expected that a TPG will begin training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project through completion of the contract, so long as training opportunities exist in his work classification or until he has completed his training program. Should the TPG's employment end in advance of the completion of the contract, the Contractor shall promptly notify the designated IDOT staff member under this Special Provision that the TPG's involvement in the contract has ended and supply a written report of the reason for the end of the involvement, the hours completed by the TPG under the Contract and the number of hours for which the incentive payment provided under this Special Provision will be or has been claimed for the TPG.

The Contractor will provide for the maintenance of records and furnish periodic reports documenting its performance under this 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 $15.00 per hour for certified TRAINEES TRAINING PROGRAM GRADUATE. The estimated total number of hours, unit price and total price have been included in the schedule of prices.

The Contractor shall provide training opportunities aimed at developing full journeyworker in the type of trade or job classification involved. The initial number of TPGs for which the incentive is available under this contract is **8**. During the course of performance of the Contract the Contractor may seek approval from the Department for additional incentive eligible TPGs. In the event the Contractor subcontracts a portion of the contract work, it shall determine how many, if any, of the TPGs 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 Program Graduate Special Provision is made applicable to such subcontract if the TPGs are to be trained by a subcontractor and that the incentive payment is passed on to each subcontractor.

For the Contractor to meet the obligations for participation in this TPG incentive program under this Special Provision, the Department has contracted with several entities to provide screening, tutoring and pre-training to individuals interested in working in the applicable construction classification and has certified those students who have successfully completed the program and are eligible to be TPGs. A designated IDOT staff member, the Director of the Office of Business and Workforce Diversity (OBWD), will be responsible for providing assistance and referrals to the Contractor for the applicable TPGs. For this contract, the Director of OBWD is designated as the responsible IDOT staff member to provide the assistance and referral services related to the placement for this Special Provision. For purposes of this Contract, contacting the Director of OBWD and interviewing each candidate he/she recommends constitutes reasonable recruitment.

Prior to commencing construction, the Contractor shall submit to the Department for approval the TPGs to be trained in each selected classification. Furthermore, the Contractor shall specify the starting time for training in each of the classifications. No employee shall be employed as a TPG in any classification in which he/she has successfully completed a training course leading to journeyman status or in which he/she has been employed as a journeyman. Notwithstanding the on-the-job training purpose of this TPG Special Provision, some offsite training is permissible as long as the offsite training is an integral part of the work of the contract and does not comprise a significant part of the overall training.

Training and upgrading of TPGs of IDOT pre-apprentice training programs is intended to move said TPGs toward journeyman status and is the primary objective of this Training Program Graduate Special Provision. Accordingly, the Contractor shall make every effort to enroll TPGs by recruitment through the IDOT funded TPG programs to the extent such persons are available within a reasonable area of recruitment. The Contractor will be responsible for demonstrating the steps that it has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance and entitled to the Training Program Graduate Special Provision $15.00 an hour incentive.

The Contractor or subcontractor shall provide each TPG with a certificate showing the type and length of training satisfactorily completed.

UNDERPASS LUMINAIRE (BDE)
Effective: August 1, 2014

Revise the first paragraph of Article 821.06 of the Standard Specifications to read:

"**821.06 Underpass Installation.** When attached directly to a structure, the underpass luminaire shall have stainless steel brackets installed between the luminaire and the structure to create a gap of not less than 1 in. (25 mm)."

Revise the third sentence of the third paragraph of Article 821.06 of the Standard Specifications to read:

"All mounting hardware, including the vibration dampers, shall be stainless steel."

Revise Article 1067.04(a) of the Standard Specifications to read:

"(a) Housing. The housing and lens frame shall be made of heavy duty die cast aluminum or 16 gauge (1.5 mm) minimum thickness stainless steel according to ASTM A 269, Grade 304L. All seams in the housing enclosure shall be welded by continuous welds.

The housing shall have an opening for installation of 3/4 in. (19 mm) diameter conduit."

Revise the third sentence of the first paragraph of Article 1067.04(b) of the Standard Specifications to read:

"The lens frame shall be hinged with a continuous stainless steel piano type hinge for stainless steel housings."

Revise the first sentence of the first paragraph of Article 1067.04(c) of the Standard Specifications to read:

"Four luminaire mounting brackets fabricated from 11 gauge (3.05 mm) stainless steel according to ASTM A 269, Grade 304L shall be used to attach the luminaire housing."

WARM MIX ASPHALT (BDE)
Effective: January 1, 2012 Revised: November 1, 2013November 1, 2014

Description. This work shall consist of designing, producing and constructing Warm Mix Asphalt (WMA) in lieu of Hot Mix Asphalt (HMA) at the Contractor's option. Work shall be according to Sections 406, 407, 408, 1030, and 1102 of the Standard Specifications, except as modified herein. In addition, any references to HMA in the Standard Specifications, or the special provisions shall be construed to include WMA.

WMA is an asphalt mixture which can be produced at temperatures lower than allowed for HMA utilizing approved WMA technologies. WMA technologies are defined as the use of additives or processes which allow a reduction in the temperatures at which HMA mixes are produced and placed. WMA is produced by the use of additives, a water foaming process, or combination of both. Additives include minerals, chemicals or organics incorporated into the asphalt binder stream in a dedicated delivery system. The process of foaming injects water into the asphalt binder stream, just prior to incorporation of the asphalt binder with the aggregate.

Approved WMA technologies may also be used in HMA provided all the requirements specified herein, with the exception of temperature, are met. However, asphalt mixtures produced at temperatures in excess of 275 °F (135 °C) will not be considered WMA when determining the grade reduction of the virgin asphalt binder grade.

Materials.

Add the following to Article 1030.02 of the Standard Specifications.

"(h) Warm Mix Asphalt (WMA) Technologies (Note 3)"

Add the following note to Article 1030.02 of the Standard Specifications.

"Note 3. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, "Warm-Mix Asphalt Technologies"."

Equipment.

Revise the first paragraph of Article 1102.01 of the Standard Specifications to read:

"**1102.01 Hot-Mix Asphalt Plant.** The hot-mix asphalt (HMA) plant shall be the batch-type, continuous-type, or dryer drum plant. The plants shall be evaluated for prequalification rating and approval to produce HMA according to the current Bureau of Materials and Physical Research Policy Memorandum, "Approval of Hot-Mix Asphalt Plants and Equipment". Once approved, the Contractor shall notify the Bureau of Materials and Physical Research to obtain approval of all plant modifications. The plants shall not be used to produce mixtures concurrently for more than one project or for private work unless permission is granted in writing by the Engineer. The plant units shall be so designed, coordinated and operated that they will function properly and produce HMA having uniform temperatures and compositions within the tolerances specified. The plant units shall meet the following requirements."

Add the following to Article 1102.01(a) of the Standard Specifications.

"(13) Equipment for Warm Mix Technologies.

a. Foaming. Metering equipment for foamed asphalt shall have an accuracy of ± 2 percent of the actual water metered. The foaming control system shall be electronically interfaced with the asphalt binder meter.

b. Additives. Additives shall be introduced into the plant according to the supplier's recommendations and shall be approved by the Engineer. The system for introducing the WMA additive shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes."

Mix Design Verification.

Add the following to Article 1030.04 of the Standard Specifications.

"(e) Warm Mix Technologies.

(1) Foaming. WMA mix design verification will not be required when foaming technology is used alone (without WMA additives). However, the foaming technology shall only be used on HMA designs previously approved by the Department.

(2) Additives. WMA mix designs utilizing additives shall be submitted to the Engineer for mix design verification."

Production.

Revise the second paragraph of Article 1030.06(a) of the Standard Specifications to read:

"At the start of mix production for HMA, WMA, and HMA using WMA technologies, QC/QA mixture start-up will be required for the following situations; at the beginning of production of a new mixture design, at the beginning of each production season, and at every plant utilized to produce mixtures, regardless of the mix."

Quality Control/Quality Assurance Testing.

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:

Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Frequency of Tests All Other Mixtures	Test Method See Manual of Test Procedures for Materials
Aggregate Gradation % passing sieves: 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 μm) No. 200 (75 μm) Note 1.	1 washed ignition oven test on the mix per half day of production Note 4.	1 washed ignition oven test on the mix per day of production Note 4.	Illinois Procedure
Asphalt Binder Content by Ignition Oven Note 2.	1 per half day of production	1 per day	Illinois-Modified AASHTO T 308
VMA Note 3.	Day's production ≥ 1200 tons: 1 per half day of production	N/A	Illinois-Modified AASHTO R 35
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)		
Air Voids Bulk Specific Gravity of Gyratory Sample Note 5.	Day's production ≥ 1200 tons: 1 per half day of production	1 per day	Illinois-Modified AASHTO T 312
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day)		
Maximum Specific Gravity of Mixture	Day's production ≥ 1200 tons: 1 per half day of production	1 per day	Illinois-Modified AASHTO T 209
	Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first		

Parameter	Frequency of Tests High ESAL Mixture Low ESAL Mixture	Frequency of Tests All Other Mixtures	Test Method See Manual of Test Procedures for Materials
	sample of the day)		

Note 1. The No. 8 (2.36 mm) and No. 30 (600 µm) sieves are not required for All Other Mixtures.

Note 2. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.

Note 3. The G_{sb} used in the voids in the mineral aggregate (VMA) calculation shall be the same average G_{sb} value listed in the mix design.

Note 4. The Engineer reserves the right to require additional hot bin gradations for batch

Note 5. The WMA compaction temperature for mixture volumetric testing shall be 270 ± 5 °F (132 ± 3 °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be 270 ± 5 °F (132 ± 3 °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature it shall be reheated to standard HMA compaction temperatures."

Construction Requirements.

Revise the second paragraph of Article 406.06(b)(1) of the Standard Specifications to read:

"The HMA shall be delivered at a temperature of 250 to 350 °F (120 to 175 °C). WMA shall be delivered at a minimum temperature of 215 °F (102 °C)."

Basis of Payment.

This work will be paid at the contract unit price bid for the HMA pay items involved. Anti-strip will not be paid for separately, but shall be considered as included in the cost of the work.

WEEKLY DBE TRUCKING REPORTS (BDE)
Effective: June 2, 2012

The Contractor shall provide a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used on the jobsite; or used for the delivery and/or removal of equipment/material to and from the jobsite. The jobsite shall also include offsite locations, such as plant sites or storage sites, when those locations are used solely for this contract.

The report shall be submitted on the form provided by the Department within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur. The report shall be submitted to the Engineer and a copy shall be provided to the district EEO Officer.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

BITUMINOUS MATERIALS COST ADJUSTMENTS (BDE) (RETURN FORM WITH BID)
Effective: November 2, 2006 Revised: January 1, 2012August 1, 2013

Description. Bituminous material cost adjustments will be made to provide additional compensation to the Contractor, or credit to the Department, for fluctuations in the cost of bituminous materials when optioned by the Contractor. The adjustments shall apply to permanent and temporary hot-mix asphalt (HMA) mixtures, bituminous surface treatments (cover and seal coats), and preventative maintenance type surface treatments. The adjustments shall not apply to bituminous prime coats, tack coats, crack filling/sealing, or joint filling/sealing.

The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form, or failure to fill out the form completely, shall make this contract exempt of bituminous materials cost adjustments.

Method of Adjustment. Bituminous materials cost adjustments will be computed as follows.

$CA = (BPI_P - BPI_L) \times (\%AC_V / 100) \times Q$

Where: CA = Cost Adjustment, $.
BPI_P = Bituminous Price Index, as published by the Department for the month the work is performed, $/ton ($/metric ton).
BPI_L = Bituminous Price Index, as published by the Department for the month prior to the letting, $/ton ($/metric ton).
$\%AC_V$ = Percent of virgin Asphalt Cement in the Quantity being adjusted. For HMA mixtures, the % AC_V will be determined from the adjusted job mix formula. For bituminous materials applied, a performance graded or cutback asphalt will be considered to be 100% AC_V and undiluted emulsified asphalt will be considered to be 65% AC_V.
Q = Authorized construction Quantity, tons (metric tons) (see below).

For HMA mixtures measured in square yards: Q, tons = A x D x (G_{mb} x 46.8) / 2000. For HMA mixtures measured in square meters: Q, metric tons = A x D x (G_{mb} x 24.991) / 1000. When computing adjustments for full-depth HMA pavement, separate calculations will be made for the binder and surface courses to account for their different G_{mb} and % AC_V.

For bituminous materials measured in gallons: Q, tons = V x 8.33 lb/gal x SG / 2000
For bituminous materials measured in liters: Q, metric tons = V x 1.0 kg/L x SG / 1000

Where: A = Area of the HMA mixture, sq yd (sq m).
D = Depth of the HMA mixture, in. (mm).
G_{mb} = Average bulk specific gravity of the mixture, from the approved mix design.
V = Volume of the bituminous material, gal (L).
SG = Specific Gravity of bituminous material as shown on the bill of lading.

Basis of Payment. Bituminous materials cost adjustments may be positive or negative but will only be made when there is a difference between the BPI_L and BPI_P in excess of five percent, as calculated by:

$\text{Percent Difference} = \{(BPI_L - BPI_P) \div BPI_L\} \times 100$

Bituminous materials cost adjustments will be calculated for each calendar month in which applicable bituminous material is placed; and will be paid or deducted when all other contract requirements for the work placed during the month are satisfied. The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Return With Bid

ILLINOIS DEPARTMENT OF TRANSPORTATION

OPTION FOR BITUMINOUS MATERIALS COST ADJUSTMENTS

The bidder shall submit this completed form with his/her bid. Failure to submit the form, or failure to fill out the form completely, shall make this contract exempt of bituminous materials cost adjustments. After award, this form, when submitted, shall become part of the contract.

Contract No.: _____

Company Name:_____

Contractor's Option:

Is your company opting to include this special provision as part of the contract?

Yes ☐ No ☐

Signature: _____ **Date:** _____

STEEL COST ADJUSTMENT (BDE) (RETURN FORM WITH BID)
Effective: April 2, 2004 Revised: April 1, 2009

Description. Steel cost adjustments will be made to provide additional compensation to the Contractor, or a credit to the Department, for fluctuations in steel prices when optioned by the Contractor. The bidder shall indicate on the attached form whether or not this special provision will be part of the contract and submit the completed form with his/her bid. Failure to submit the form or failure to indicate contract number, company name, and sign and date the form shall make this contract exempt of steel cost adjustments for all items of steel. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment.

Types of Steel Products. An adjustment will be made for fluctuations in the cost of steel used in the manufacture of the following items:

Metal Piling (excluding temporary sheet piling)
Structural Steel
Reinforcing Steel

Other steel materials such as dowel bars, tie bars, mesh reinforcement, guardrail, steel traffic signal and light poles, towers and mast arms, metal railings (excluding wire fence), and frames and grates will be subject to a steel cost adjustment when the pay items they are used in has a contract value of $10,000 or greater.

Documentation. Sufficient documentation shall be furnished to the Engineer to verify the following:

(a) The dates and quantity of steel, in lb (kg), shipped from the mill to the fabricator.

(b) The quantity of steel, in lb (kg), incorporated into the various items of work covered by this special provision. The Department reserves the right to verify submitted quantities.

Method of Adjustment. Steel cost adjustments will be computed as follows:

SCA = Q X D

Where: SCA = steel cost adjustment, in dollars
Q = quantity of steel incorporated into the work, in lb (kg)
D = price factor, in dollars per lb (kg)

$D = MPI_M - MPI_L$

Where: MPI_M = The Materials Cost Index for steel as published by the Engineering News-Record for the month the steel is shipped from the mill. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

MPI_L = The Materials Cost Index for steel as published by the Engineering News-Record for the month prior to the letting. The indices will be converted from dollars per 100 lb to dollars per lb (kg).

The unit weights (masses) of steel that will be used to calculate the steel cost adjustment for the various items are shown in the attached table.

No steel cost adjustment will be made for any products manufactured from steel having a mill shipping date prior to the letting date.

If the Contractor fails to provide the required documentation, the method of adjustment will be calculated as described above; however, the MPI_M will be based on the date the steel arrives at the job site. In this case, an adjustment will only be made when there is a decrease in steel costs.

Basis of Payment. Steel cost adjustments may be positive or negative but will only be made when there is a difference between the MPI_L and MPI_M in excess of five percent, as calculated by:

Percent Difference = $\{(MPI_L - MPI_M) \div MPI_L\} \times 100$

Steel cost adjustments will be calculated by the Engineer and will be paid or deducted when all other contract requirements for the items of work are satisfied. Adjustments will only be made for fluctuations in the cost of the steel as described herein. No adjustment will be made for changes in the cost of manufacturing, fabrication, shipping, storage, etc.

The adjustments shall not apply during contract time subject to liquidated damages for completion of the entire contract.

Attachment

Item	Unit Mass (Weight)
Metal Piling (excluding temporary sheet piling)	
Furnishing Metal Pile Shells 12 in. (305 mm), 0.179 in. (3.80 mm) wall thickness)	23 lb/ft (34 kg/m)
Furnishing Metal Pile Shells 12 in. (305 mm), 0.250 in. (6.35 mm) wall thickness)	32 lb/ft (48 kg/m)
Furnishing Metal Pile Shells 14 in. (356 mm), 0.250 in. (6.35 mm) wall thickness)	37 lb/ft (55 kg/m)
Other piling	See plans
Structural Steel	See plans for weights (masses)
Reinforcing Steel	See plans for weights (masses)
Dowel Bars and Tie Bars	6 lb (3 kg) each
Mesh Reinforcement	63 lb/100 sq ft (310 kg/sq m)
Guardrail	
Steel Plate Beam Guardrail, Type A w/steel posts	20 lb/ft (30 kg/m)
Steel Plate Beam Guardrail, Type B w/steel posts	30 lb/ft (45 kg/m)
Steel Plate Beam Guardrail, Types A and B w/wood posts	8 lb/ft (12 kg/m)
Steel Plate Beam Guardrail, Type 2	305 lb (140 kg) each
Steel Plate Beam Guardrail, Type 6	1260 lb (570 kg) each
Traffic Barrier Terminal, Type 1 Special (Tangent)	730 lb (330 kg) each
Traffic Barrier Terminal, Type 1 Special (Flared)	410 lb (185 kg) each
Steel Traffic Signal and Light Poles, Towers and Mast Arms	
Traffic Signal Post	11 lb/ft (16 kg/m)
Light Pole, Tenon Mount and Twin Mount, 30 - 40 ft (9 – 12 m)	14 lb/ft (21 kg/m)
Light Pole, Tenon Mount and Twin Mount, 45 - 55 ft (13.5 – 16.5 m)	21 lb/ft (31 kg/m)
Light Pole w/Mast Arm, 30 - 50 ft (9 – 15.2 m)	13 lb/ft (19 kg/m)
Light Pole w/Mast Arm, 55 - 60 ft (16.5 – 18 m)	19 lb/ft (28 kg/m)
Light Tower w/Luminaire Mount, 80 - 110 ft (24 – 33.5 m)	31 lb/ft (46 kg/m)
Light Tower w/Luminaire Mount, 120 - 140 ft (36.5 – 42.5 m)	65 lb/ft (97 kg/m)
Light Tower w/Luminaire Mount, 150 - 160 ft (45.5 – 48.5 m)	80 lb/ft (119 kg/m)
Metal Railings (excluding wire fence)	
Steel Railing, Type SM	64 lb/ft (95 kg/m)
Steel Railing, Type S-1	39 lb/ft (58 kg/m)
Steel Railing, Type T-1	53 lb/ft (79 kg/m)
Steel Bridge Rail	52 lb/ft (77 kg/m)
Frames and Grates	
Frame	250 lb (115 kg)
Lids and Grates	150 lb (70 kg)

Return With Bid

ILLINOIS DEPARTMENT OF TRANSPORTATION

OPTION FOR STEEL COST ADJUSTMENT

The bidder shall submit this completed form with his/her bid. Failure to submit the form or properly complete contract number, company name, and sign and date the form shall make this contract exempt of steel cost adjustments for all items of steel. Failure to indicate "Yes" for any item of work will make that item of steel exempt from steel cost adjustment. After award, this form, when submitted shall become part of the contract.

Contract No.: _____

Company Name:_____

Contractor's Option:

Is your company opting to include this special provision as part of the contract plans for the following items of work?

Metal Piling	Yes	☐
Structural Steel	Yes	☐
Reinforcing Steel	Yes	☐
Dowel Bars, Tie Bars and Mesh Reinforcement	Yes	☐
Guardrail	Yes	☐
Steel Traffic Signal and Light Poles, Towers and Mast Arms	Yes	☐
Metal Railings (excluding wire fence)	Yes	☐
Frames and Grates	Yes	☐

Signature: _____ **Date:** _____

SWPPP

Illinois Department of Transportation

Storm Water Pollution Prevention Plan

Route	F.A.I. 55	Marked Rte.	Stevenson Expressway
Section	2010-080-B	Project No.	
County	Cook County	Contract No.	60L70

This plan has been prepared to comply with the provisions of the National Pollutant Discharge Elimination System (NPDES) Permit No. ILR10 (Permit ILR10), issued by the Illinois Environmental Protection Agency (IEPA) for storm water discharges from construction site activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

John Fortmann, PE
Print Name

Deputy Director of Highways, Region One Engineer
Title

Illinois Department of Transportation
Agency

Signature

7-23-2014
Date

I. Site Description:

A. Provide a description of the project location (include latitude and longitude):

The project is located along FAI Route 55 (Stevenson Expressway) from east of FAI Route I-94 (Dan Ryan Expressway) near Prairie Avenue to US 41 (Lake Shore Drive), in the City of Chicago, Cook County, Illinois.

Longitude: 87° 36' 52.72" W
Latitude: 41° 50' 54.25" N

B. Provide a description of the construction activity which is the subject of this plan:

The work consists of bridge construction and the reconfiguration of the outbound bridges of the I-55 and Lake Shore Drive Interchange to provide an additional lane along Ramp NW from Northbound Lake Shore Drive to Southbound I-55, the removal and replacement of Ramp SW from Southbound Lake Shore Drive to Southbound I-55, and the reconstruction and widening of the SB I-55 structure.

Work includes bridge construction, roadway reconstruction, retaining wall construction, bridge removal, erosion control and protection, utility relocation, special waste excavation, earth excavation and embankment, grading, new storm and combined sewers, pavements, sidewalks, curb and gutter, pavement marking and signage, roadway lighting, ITS, concrete abutments, steel furnishing and erection, bridge deck and parapets, traffic control and protection, urban enhancements and all incidental and collateral work necessary to complete the improvements as shown on the plans.

C. Provide the estimated duration of this project:

20 months

D. The total area of the construction site is estimated to be 14.3 acres.

The total area of the site estimated to be disturbed by excavation, grading or other activities is 11.6 acres.

E. The following is a weighted average of the runoff coefficient for this project after construction activities are completed:

EXISTING: 8.1 AC (0.3 PERVIOUS) + 6.2 AC (0.9 IMPERVIOUS) / 14.3 AC = 0.56

PROPOSED: 7.7 AC (0.3 PERVIOUS) + 6.6 AC (0.9 IMPERVIOUS) / 14.3 AC = 0.58

F. List all soils found within project boundaries. Include map unit name, slope information, and erosivity:

WSS: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

MUID Description
392A Urban land-Orthents, loamy, complex, nearly level - high infiltration rate and a low potential for runoff with a high susceptibility to erosion.
533 Urban land
811B Alfic Udarents, clayey, 2 to 6 percent slopes - very low infiltration rates and a high potential for runoff with a moderate susceptibility to erosion.

G. Provide an aerial extent of wetland acreage at the site:

No wetlands were identified on site.

H. Provide a description of potentially erosive areas associated with this project:

Potential erosive areas are along embankments and grasses adjacent to US 41 (Lake Shore Drive) and SB I-55 (Stevenson Expressway).

I. The following is a description of soil disturbing activities by stages, their locations, and their erosive factors (e.g. steepness of slopes, length of slopes, etc):

STAGE 1A

- Remove west half of tangent section of existing Ramp NW (S.N. 016-1048).
- Initiate installation of drilled shaft foundations and construction of piers and Spans 13W through 20W (Units 1 to 3) and the west half of Spans 21W and 22W (Unit 4) of proposed Ramp NW (S.N. 016-1505).
- Construct temporary pavement at Ramp NW gore for use in Stage 2A.

STAGE 1B

- Remove east portion of existing Ramp SW (S.N. 016-1052).
- Remove south portion of existing SB I-55 structure (S.N. 016-1055).
- Continue construction of Spans 13W through 20W (Units 1 to 3) and the west half of Spans 21W and 22W (Unit 4) of proposed Ramp NW (S.N. 016-1505). Construct west portion of Retaining Wall (S.N. 016-0746).
- Construct south portion of Spans 6W through 8W (Unit 1) and Spans 10W through 12W (Unit 2) of proposed Ramp SW (S.W. 016-1504). Construct east portion of Retaining Wall (S.N. 016-0745).
- Construct south portion of Spans 1W through 5W of proposed SB I-55 structure (S.N. 016-1501). This work includes erection of Girders 5 through 9 and superstructure spanning from Pier 5W through the west abutment and the retained earth west approach.

STAGE 2A-1

- Remove existing Ramp NW (S.N. 016-1048).
- Continue construction of Spans 21W and 22W (Unit 4) of proposed Ramp NW (S.N. 016-1505) and east portion of Retaining Wall (S.N. 016-0746).
- Construct center portion of Spans 6W through 8W (Unit 1) and south portion of Span 9W (Unit 2) of proposed Ramp SW (S.N. 016-1504).
- Construct center portion of pavement on west approach of proposed SB I-55.
- Construct permanent pavement along outside of SB Lake Shore Drive and Ramp SW at the 23rd Street bridge.
- Install permanent sheet piling along north limits of proposed Retaining Wall (S.N. 016-0745).

STAGE 2A-2

- Continue construction and demolition from Stage 2A-1
- Continue to construct center portion of Spans 6W through 8W (Unit 1) and south portion of Span 9W (Unit 2) of proposed Ramp SW (S.N. 016-1504).

STAGE 2B

- Continue removal of existing Ramp NW (S.N. 016-1048). Remove temporary pavement.
- Remove remaining west portion of existing Ramp SW (S.N. 016-1052).
- Remove remaining north portion of existing SB I-55 structure (S.N. 016-1055).
- Complete remaining north portion of Spans 6W through 8W (Unit 1) of proposed Ramp SW (S.N. 016-1504) and the west portion of proposed Retaining Wall (S.N. 016-0745).
- Complete remaining north portion of Spans 1W through 5W of SB I-55 structure (S.N. 016-1501) and the north portion Retaining Wall (S.N. 016-0741).
- Complete all site grading, drainage, lighting, ITS, landscaping and restoration activities.

J. See the erosion control plans and/or drainage plans for this contract for information regarding drainage patterns, approximate slopes anticipated before and after major grading activities, locations where vehicles enter or exit the site and controls to prevent offsite sediment tracking (to be added after contractor identifies locations), areas of soil disturbance, the location of major structural and non-structural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands) and locations where storm water is discharged to surface water including wetlands.

K. Identify who owns the drainage system (municipality or agency) this project will drain into:

City of Chicago / IDOT / Metropolitan Water Reclamation District of Greater Chicago (MWRD)

L. The following is a list of General NPDES ILR40 permittees within whose reporting jurisdiction this project is located.

City of Chicago / IDOT / Metropolitan Water Reclamation District of Greater Chicago (MWRD)

M. The following is a list of receiving water(s) and the ultimate receiving water(s) for this site. The location of the receiving waters can be found on the erosion and sediment control plans:

Lake Michigan receives overflow from portions of the Ramp NW drainage system. The Ramp NW and the Ramp SW between Lake Shore Drive and the Metra and CN Railroad tracks drain to the MWRD sewer which ultimately drains to The Chicago River. The Ramp NW and Ramp SW west of the Metra and CN Railroad Tracks and SB I-55 drains to an IDOT sewer system to Pump Station 29, which ultimately drains to the Chicago River.

N. Describe areas of the site that are to be protected or remain undisturbed. These areas may include steep slopes, highly erodible soils, streams, stream buffers, specimen trees, natural vegetation, nature preserves, etc.

Burnham Park and the McCormick Place Bird Sanctuary are located immediately east of the project site but outside of the improvement limits. Embankment slopes are to be regraded and vegetation to be re-established.

O. The following sensitive environmental resources are associated with this project, and may have the potential to be impacted by the proposed development:

- ☐ Floodplain
- ☐ Wetland Riparian
- ☐ Threatened and Endangered Species
- ☐ Historic Preservation
- ☐ 303(d) Listed receiving waters for suspended solids, turbidity, or siltation
- ☐ Receiving waters with Total Maximum Daily Load (TMDL) for sediment, total suspended solids, turbidity or siltation
- ☒ Applicable Federal, Tribal, State or Local Programs
- ☐ Other

1. 303(d) Listed receiving waters (fill out this section if checked above):

   a. The name(s) of the listed water body, and identification of all pollutants causing impairment:

b. Provide a description of how erosion and sediment control practices will prevent a discharge of sediment resulting from a storm event equal to or greater than a twenty-five (25) year, twenty-four (24) hour rainfall event:

c. Provide a description of the location(s) of direct discharge from the project site to the 303(d) water body:

d. Provide a description of the location(s) of any dewatering discharges to the MS4 and/or water body:

2. TMDL (fill out this section if checked above)

a. The name(s) of the listed water body:

b. Provide a description of the erosion and sediment control strategy that will be incorporated into the site design that is consistent with the assumptions and requirements of the TMDL:

c. If a specific numeric waste load allocation has been established that would apply to the project's discharges, provide a description of the necessary steps to meet that allocation:

P. The following pollutants of concern will be associated with this construction project:

☒	Soil Sediment	☒	Petroleum (gas, diesel, oil, kerosene, hydraulic oil / fluids)
☒	Concrete	☒	Antifreeze / Coolants
☒	Concrete Truck Waste	☒	Waste water from cleaning construction equipment
☒	Concrete Curing Compounds	☐	Other (specify)
☒	Solid Waste Debris	☐	Other (specify)
☒	Paints	☐	Other (specify)
☒	Solvents	☐	Other (specify)
☒	Fertilizers / Pesticides	☐	Other (specify)

II. Controls:

This section of the plan addresses the controls that will be implemented for each of the major construction activities described in I.C. above and for all use areas, borrow sites, and waste sites. For each measure discussed, the Contractor will be responsible for its implementation as indicated. The Contractor shall provide to the Resident Engineer a plan for the implementation of the measures indicated. The Contractor, and subcontractors, will notify the Resident Engineer of any proposed changes, maintenance, or modifications to keep construction activities compliant with the Permit ILR10. Each such Contractor has signed the required certification on forms which are attached to, and are a part of, this plan:

A. **Erosion and Sediment Controls:** At a minimum, controls must be coordinated, installed and maintained to:

1. Minimize the amount of soil exposed during construction activity;
2. Minimize the disturbance of steep slopes;
3. Maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible;
4. Minimize soil compaction and, unless infeasible, preserve topsoil.

B. **Stabilization Practices:** Provided below is a description of interim and permanent stabilization practices, including site- specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include but are not limited to: temporary seeding, permanent seeding, mulching, geotextiles, sodding, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided below in II(B)(1) and II(B)(2), stabilization measures shall be initiated **immediately** where construction activities have temporarily or permanently ceased, but in no case more than **one (1) day** after the construction activity in that portion of the site has temporarily or permanently ceases on all disturbed portions of the site where construction will not occur for a period of fourteen (14) or more calendar days.

1. Where the initiation of stabilization measures is precluded by snow cover, stabilization measures shall be initiated as soon as practicable.

2. On areas where construction activity has temporarily ceased and will resume after fourteen (14) days, a temporary stabilization method can be used.

The following stabilization practices will be used for this project:

☐	Preservation of Mature Vegetation	☒	Erosion Control Blanket / Mulching
☐	Vegetated Buffer Strips	☐	Sodding
☒	Protection of Trees	☐	Geotextiles
☒	Temporary Erosion Control Seeding	☒	Other (specify) Surface Roughening
☐	Temporary Turf (Seeding, Class 7)	☐	Other (specify)
☒	Temporary Mulching	☐	Other (specify)
☒	Permanent Seeding	☐	Other (specify)

Describe how the stabilization practices listed above will be utilized during construction:

Refer to the Erosion and Sedimentation Control staging plan sheets for the contract specifc stabilization practices called out for temporary conditions during construction. Temporary stabilization shall be completed on the current stage prior to switching traffic to the next stage. Stabilization controls runoff volume and velocity, peak runoff rates and volumes of discharge to minimize exposed soil, disturbed slopes, sediment discharges from construction, and provide for natural buffers and minimization of soil compaction. Existing vegetated areas where disturbance can be avoided will not require stabilization.

Protection of Trees - All trees designated to be saved, or outside of the limits of construction, shall be protected prior to bo beginning any clearing or removal work and shall remain protected during subsequent construction work. Protection of trees shall be shown on the plans or as directed by the engineer in accordance with Article 201.05 of the IDOT Standard Specifications for Road and Bridge Construction.

Temporary Erosion Control Seeding - This item will be applied to all bare areas every seven days to minimize the amount of exposed surface areas. Earth stockpiles shall be temporarily seeded if they are to remain unused for more than 14 days. Within the construction limits, areas which may be suspectible to erosion as determined by the Engineer shall remain undisturbed until full scale construction is underway to prevent unnecessary soil erosion. Bare and sparsely vegetated ground in highly erodible areas as determined by the Engineer shall be temporarily seeded at the beginning of construction where no construction activities are expected within seven days.

Temporary Mulching - Mulch is applied to temporary erosion control seeding to allow for the seeding to take hold in the ground and grow. Without the mulching, the seeding will be displaced by wind and rain and therefore would not grow. Mulch Method 4 (Compost) and surface roughening shall be used for temporary stabilization during winter instead of temporary erosion control seeding when grading will occur after September 30th when temporary seed will not germinate and provide erosion control protection until the following spring. Mulch will be paid separately and shall conform to Section 251 of the Standard Specifications.

Surface Roughening: All slopes steeper than 3:1 (horizontal to vertical) shall be surface roughened by either stair-step grading, grooving, or tracking. Areas with slopes flatter than 3:1 shall have the soil surface lightly roughened and loosened to a depth of 2 to 4 inches prior to seeding.

Describe how the stabilization practices listed above will be utilized after construction activities have been completed:

Refer to the Permanent Erosion and Sedimentation Control plan sheets for the contract specific stabilization practices used for permanent conditions after construction activities. All areas disturbed by construction will be stabilized with permanent seeding with erosion control blanket or mulching.

Permanent Seeding - Used at locations where there will be no more disturbances. The seeding will keep the soil from eroding due to natural conditions (wind, rain, etc).

Erosion Control Blanket / Mulching - Erosion Control Blankets will be installed over fill slopes and in high velocity areas (i.e. ditches) and seeded to protect slopes from erosion and allow seeds to germinate. It will be installed over the permanent seeding to allow the seeding to take hold in the ground and grow. Without protection, the seeding will be displaced by wind and rain. Mulch may be applied in relatively flat areas to protect the disturbed areas and prevent further erosion.

C. **Structural Practices:** Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include but are not limited to: perimeter erosion barrier, earth dikes, drainage swales, sediment traps, ditch checks, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. The installation of these devices may be subject to Section 404 of the Clean Water Act.

The following structural practices will be used for this project:

☒	Perimeter Erosion Barrier	☐	Rock Outlet Protection
☐	Temporary Ditch Check	☐	Riprap
☒	Storm Drain Inlet Protection	☐	Gabions
☐	Sediment Trap	☐	Slope Mattress
☐	Temporary Pipe Slope Drain	☒	Retaining Walls
☐	Temporary Sediment Basin	☐	Slope Walls
☐	Temporary Stream Crossing	☐	Concrete Revetment Mats
☒	Stabilized Construction Exits	☐	Level Spreaders
☐	Turf Reinforcement Mats	☒	Other (specify) Stabilized Flow Line
☐	Permanent Check Dams	☐	Other (specify)
☐	Permanent Sediment Basin	☐	Other (specify)
☐	Aggregate Ditch	☐	Other (specify)
☐	Paved Ditch	☐	Other (specify)

Describe how the structural practices listed above will be utilized during construction:

Refer to the Erosion and Sedimentation Control staging plan sheets for the contract specific structural practices for temporary conditions during construction.

Perimeter Erosion Barrier - Silt fences shall be placed along the contour at the limits in an effort to contain silt and runoff from leaving the site. Silt fence shall not be installed in areas of concentrated flow such as across ditches. The barrier will be constructed at the beginning of construction. Silt fences will be modified as necessary to accommodate the phasing of construction and any damage to silt fence by traffic or snow plowing should be immediately fixed by the Contractor. Perimeter Erosion Barrier will remain in place until all remaining items of the project have been completed.

Storm Drain Inlet Protection - To be utilized at all open lid inlets, catch basins and manholes during construction and shall be cleaned on a regular basis. Inlet protection for structures in grass draining ditches or swales shall consist of silt filter fence and inlet protection for drainage structures within the roadway shall be inlet filters installed directly on the drainage structure or under the grate of a drainage structure. Inlet filters will be checked on a periodic basis and any sediment /debris will be removed to maintain inlet protection. Storm Drain Inlet protection will be done in accordance with Article 280.04 of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction.

Stabilized Construction Exits - Stabilized Construction Exits or Entrances will be provided by the Contractor. The entrance shall be maintained in a condition which shall prevent tracking or flowing of sediment onto Public-Right-Of-Way. Periodic Inspection and needed maintenance shall be provided after heavy use and each rainfall event.

Stabilized Flow Line - The Contractor shall provide to the RE a plan to have stabilized conveyance between upstream and downstream ends of storm sewer under construction when rain is forecasted, so that flow will not erode. This is important where new storm sewer connects to an existing storm sewer system. The use of stabilized flow line between an installed storm sewer and open disturbance will reduce the potential for the offiste discharge of sediment-bearing waters.

All erosion control products furnished shall be installed specifically as recommended by the manufacturer for the use specified in the erosion control plan prior to the approval and use of the product. The Contractor shall submit to the Engineer a notarized certification by the producer stating the intended use of the product and that the physical properties required for this application are met or exceeded. The Contractor shall provide manufacturer installation procedures to facilitate the Engineer in construction inspection.

Describe how the structural practices listed above will be utilized after construction activities have been completed:

Once the construction is completed and the vegetation has been established, the perimeter barrier will be removed and areas disturbed by the removal will be stabilized with seeding and mulching.

D. **Treatment Chemicals**

Will polymer flocculants or treatment chemicals be utilized on this project: ☐ Yes ☒ No

If yes above, identify where and how polymer flocculants or treatment chemicals will be utilized on this project.

E. **Permanent Storm Water Management Controls:** Provided below is a description of measures that will be installed during the construction process to control volume and pollutants in storm water discharges that will occur after construction operations have been completed. The installation of these devices may be subject to Section 404 of the Clean Water Act.

1. Such practices may include but are not limited to: storm water detention structures (including wet ponds), storm water retention structures, flow attenuation by use of open vegetated swales and natural depressions, infiltration of runoff on site, and sequential systems (which combine several practices).

   The practices selected for implementation were determined on the basis of the technical guidance in Chapter 41 (Construction Site Storm Water Pollution Control) of the IDOT Bureau of Design and Environment Manual. If practices other than those discussed in Chapter 41 are selected for implementation or if practices are applied to situations different from those covered in Chapter 41, the technical basis for such decisions will be explained below.

2. Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g. maintenance of hydrologic conditions such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

   Description of permanent storm water management controls:

   Retaining walls along Ramp NW and Ramp SW and the tangent section of SB I-55 will retain the embankment.

F. **Approved State or Local Laws:** The management practices, controls and provisions contained in this plan will be in accordance with IDOT specifications, which are at least as protective as the requirements contained in the Illinois Environmental Protection Agency's Illinois Urban Manual. Procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials shall be described or incorporated by reference in the space provided below. Requirements specified in sediment and erosion site plans, site permits, storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under the Permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.

Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

All management practices, controls, and other provisions provided in this plan are in accordance with "IDOT

Standard Specification for Road and Bridge Construction and the Illinois Urban Manual."

G. **Contractor Required Submittals:** Prior to conducting any professional services at the site covered by this plan, the Contractor and each subcontractor responsible for compliance with the permit shall submit to the Resident Engineer a Contractor Certification Statement, BDE 2342a.

1. The Contractor shall provide a construction schedule containing an adequate level of detail to show major activities with implementation of pollution prevention BMPs, including the following items:

- Approximate duration of the project, including each stage of the project
- Rainy season, dry season, and winter shutdown dates
- Temporary stabilization measures to be employed by contract phases
- Mobilization timeframe
- Mass clearing and grubbing/roadside clearing dates
- Deployment of Erosion Control Practices
- Deployment of Sediment Control Practices (including stabilized construction entrances/exits)
- Deployment of Construction Site Management Practices (including concrete washout facilities, chemical storage, refueling locations, etc.)
- Paving, saw-cutting, and any other pavement related operations
- Major planned stockpiling operations
- Timeframe for other significant long-term operations or activities that may plan non-storm water discharges such as dewatering, grinding, etc.
- Permanent stabilization activities for each area of the project

2. The Contractor and each subcontractor shall provide, as an attachment to their signed Contractor Certification Statement, a discussion of how they will comply with the requirements of the permit in regard to the following items and provide a graphical representation showing location and type of BMPs to be used when applicable:

- Vehicle Entrances and Exits – Identify type and location of stabilized construction entrances and exits to be used and how they will be maintained.
- Material Delivery, Storage and Use – Discuss where and how materials including chemicals, concrete curing compounds, petroleum products, etc. will be stored for this project.
- Stockpile Management – Identify the location of both on-site and off-site stockpiles. Discuss what BMPs will be used to prevent pollution of storm water from stockpiles.
- Waste Disposal – Discuss methods of waste disposal that will be used for this project.
- Spill Prevention and Control – Discuss steps that will be taken in the event of a material spill (chemicals, concrete curing compounds, petroleum, etc.)
- Concrete Residuals and Washout Wastes – Discuss the location and type of concrete washout facilities to be used on this project and how they will be signed and maintained.
- Litter Management – Discuss how litter will be maintained for this project (education of employees, number of dumpsters, frequency of dumpster pick-up, etc.).
- Vehicle and Equipment Fueling – Identify equipment fueling locations for this project and what BMPs will be used to ensure containment and spill prevention.
- Vehicle and Equipment Cleaning and Maintenance – Identify where equipment cleaning and maintenance locations for this project and what BMPs will be used to ensure containment and spill prevention.
- Dewatering Activities – Identify the controls which will be used during dewatering operations to ensure sediments will not leave the construction site.
- Polymer Flocculants and Treatment Chemicals – Identify the use and dosage of treatment chemicals and provide the Resident Engineer with Material Safety Data Sheets. Describe procedures on how the chemicals will be used and identify who will be responsible for the use and application of these chemicals. The selected individual must be trained on the established procedures.
- Additional measures indicated in the plan.

III. **Maintenance:**

When requested by the Contractor, the Resident Engineer will provide general maintenance guides to the Contractor for the practices associated with this project. The following additional procedures will be used to maintain, in good and effective operating conditions, the vegetation, erosion and sediment control measures and other protective measures identified in this plan. It will be the Contractor's responsibility to attain maintenance guidelines for any manufactured BMPs which are to be installed and maintained per manufacture's specifications.

The Contractor will be responsible for the inspection, maintenance and repair of all sedimentation and erosion control measures. Any necessary reapirs or cleanup to maintain the effectiveness of said measures shall be made immediately. If the Engineer notices or is notified of an erosion or sedimentation deficiency, the Engineer will notify the Contractor to correct it. All Offsite Borrow, Waste, and Use areas are part of the construction site and are to be inspected according to the language in this section and Section IV.

All erosion and sediment control measures shall be maintained in accordance with the IDOT Erosion and Sediment Control Field Guide for Construction Inspection:
http://www.dot.il.gov/desenv/environmental/idot%20field%20guide.pdf

In additional, the following link may also be useful for maintenance:
http://www.dot.il.gov/desenv/environmental/bestpractices.html

Seeding - All erodible bare earth will be temporarily seeded on a weekly basis to minimize the amount of erodible surface within the contract limits. Construction equipment shall be stored and fueled only at designated locations. All necessary measures shall be taken to contain any fuel or pollution runoff in compliance with environmental law and EPA Water Quality Regulations. Leaking equipment or supplies shall be immediately repaired or removed from the site. On a weekly basis, the Engineer shall inspect the project to determine whether erosion control efforts are in place and effective and if additional control measures are necessary. Sediment collected during construction by the various temporary erosion control systems shall be disposed on the site on a regular basis as directed by the Engineer and stabilized accordingly.

Temporary Erosion Control Seeding - Reapply seed if stabilization has not been achieved. Apply temporary mulch to hold seed in place if seed has been washed away or found to be concentrated in ditech bottoms. Restore rills as quickly as possible on slopes steeper than 1V:4H to prevent sheet-flow from becoming concentrated flow patterns.

Perimeter Erosion Barrier - This shall be inspected every 7 calendar days and after a storm event of 0.5 inch or greater (including snowfall). Repair when tears, gaps, leaning or undermining occur and restore erosion barrier taut. Repair or replace any missing or broken stakes immediately. Sediment will be removed if the integrity of the fencing is in jeopardy. Remove once permanent stabilization is established since it will no longer be necessary.

Erosion Control Blanket - Repair damage due to water running beneath the blanket and restore when displacement occurs. Reseeding may be necessary. Replace and re-staple all displaced erosion control blankets immediately.

Mulching - Temporary mulch is to be inspected by the Resident Engineer and Contractor every 7 calendar days and after a storm event of 0.5 inch or greater (including snowfall). If straw is blwon or washed away, erosion control blanket curls or slides down a slope, or hydraulic mulch washes away, maintenance of this item will be required.

Surface Roughening: The slope shall be inspected after every runoff producing rain and repairs made as needed. Fill any eroded areas to slightly above the original grade, re-roughen the surface, then re-seed and mulch as soon as possible.

Storm Drain Inlet Protection - Remove sediment from inlet filter basket when it is 25% full or 50% of the fabric pores are covered with silt. Remove ponded water on road surfaces immediately. Clean filter if standing water is present longer than one hour after a rain event. Remove trash accumulated around or on top of practice. When filter is removed for cleaning, replace filter if any tear is present.

Stabilized Flow Line: Follow approved maintenance plans provided by the Contractor to avoid the flow from eroding at the upstream and downstream ends of storm sewer when it is under construction.

Stabilization Construction Exits - Replenish stone or replace exit if vehicles continue to track sediment onto the roadway from the construction site. Sweep sediment on roadway from construction activities immediately. Use street sweeping in conjunction with this BMP to remove sediment not removed by the stabilized construction exit.

Material Delivery and Storage - Document the various types of materials delivered and their storage locations in the SWPPP. Update the SWPPP when significant changes occur to material storage or handling locations and when they

have been removed. Cleanup spills immediately. Remove empty containers.

The department has not obtained any permits for offsite borrow, waste, use (BWU) areas. prior to working in BWU areas, if the contractor chooses to use activities requiring permits it is the contractor's responsibility to secure the proper permits. In addition to the borrow review (BDE 2289) and use/waste review (BDE 2290) submittals, the contractor shall submit an erosion and sediment control (ESC) plan for every BWU site to the department for acceptance. guidelines for acceptable BWU practices can be found in Section II.G.1 and 2 of the SWPPP. the cost of all materials and labor necessary to comply with the above provisions to prepare and implement ESC plans will not be paid for separately, but shall be considered as included in the unit bid prices of the contract and no additional compensation will be allowed.

IV. Inspections:

Qualified personnel shall inspect disturbed areas of the construction site which have not yet been finally stabilized, structural control measures, and locations where vehicles and equipment enter and exit the site using IDOT Storm Water Pollution Prevention Plan Erosion Control Inspection Report (BC 2259). Such inspections shall be conducted at least once every seven (7) calendar days and within twenty-four (24) hours of the end of a storm or by the end of the following business or work day that is 0.5 inch or greater or equivalent snowfall.

Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections will recommence when construction activities are conducted, or if there is 0.5" or greater rain event, or a discharge due to snowmelt occurs.

If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Resident Engineer shall notify the appropriate IEPA Field Operations Section office by email at: epa.swnoncomp@illinois.gov, telephone or fax within twenty-four (24) hours of the incident. The Resident Engineer shall then complete and submit an "Incidence of Non-Compliance" (ION) report for the identified violation within five (5) days of the incident. The Resident Engineer shall use forms provided by IEPA and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of non-compliance shall be signed by a responsible authority in accordance with Part VI. G of the Permit ILR10.

The Incidence of Non-Compliance shall be mailed to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Compliance Assurance Section
1021 North Grand East
Post Office Box 19276
Springfield, Illinois 62794-9276

Additional Inspections Required:

The project shall additionally be inspected by the Construction Field Engineer on a bi-weekly basis to determine that the erosion control efforts are in place and effective and if other erosion control work is necessary.

V. Failure to Comply:

Failure to comply with any provisions of this Storm Water Pollution Prevention Plan will result in the implementation of a National Pollutant Discharge Elimination System/Erosion and Sediment Control Deficiency Deduction against the Contractor and/or penalties under the Permit ILR10 which could be passed on to the Contractor.

Illinois Department of Transportation

Contractor Certification Statement

Prior to conducting any professional services at the site covered by this contract, the Contractor and every subcontractor must complete and return to the Resident Engineer the following certification. A separate certification must be submitted by each firm. Attach to this certification all items required by Section II.G of the Storm Water Pollution Prevention Plan (SWPPP) which will be handled by the Contractor/subcontractor completing this form.

Route	F.A.I. Route 55	Marked Rte.	Stevenson Expressway
Section	2010-080-B	Project No.	
County	Cook County	Contract No.	60L70

This certification statement is a part of SWPPP for the project described above, in accordance with the General NPDES Permit No. ILR10 issued by the Illinois Environmental Protection Agency.

I certify under penalty of law that I understand the terms of the Permit No. ILR 10 that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

In addition, I have read and understand all of the information and requirements stated in SWPPP for the above mentioned project; I have received copies of all appropriate maintenance procedures; and, I have provided all documentation required to be in compliance with the Permit ILR10 and SWPPP and will provide timely updates to these documents as necessary.

☐ Contractor

☐ Sub-Contractor

Print Name	Signature
Title	Date
Name of Firm	Telephone
Street Address	City/State/ZIP

Items which this Contractor/subcontractor will be responsible for as required in Section II.G. of SWPPP:

PROJECT LABOR AGREEMENT - QUARTERLY EMPLOYMENT REPORT

Public Act 97-0199 requires the Department to submit quarterly reports regarding the number of minorities and females employed under Project Labor Agreements. To assist in this reporting effort, the Contractor shall provide a quarterly workforce participation report for all minority and female employees working under the project labor agreement of this contract. The data shall be reported on Construction Form BC 820, Project Labor Agreement (PLA) Workforce Participation Quarterly Reporting Form available on the Department's website http://www.dot.il.gov/const/conforms.html.

The report shall be submitted no later than the 15th of the month following the end of each quarter (i.e. April 15 for the January – March reporting period). The form shall be emailed to DOT.PLA.Reporting@illinois.gov or faxed to (217) 524-4922.

Any costs associated with complying with this provision 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.

Illinois Department of Transportation
PROJECT LABOR AGREEMENT

This Project Labor Agreement ("PLA" or "Agreement") is entered into this _____ day of _____, 2014, by and between the Illinois Department of Transportation ("IDOT" or "Department") in its proprietary capacity, and each relevant Illinois AFL-CIO Building Trades signatory hereto as determined by the Illinois AFL-CIO Statewide Project Labor Agreement Committee on behalf of each of its affiliated members (individually and collectively, the "Unions"). This PLA shall apply to Construction Work (as defined herein) to be performed by IDOT's Prime Contractor and each of its subcontractors of whatever tier ("Subcontractor" or "Subcontractors") on Contract No. **60L70** (hereinafter, the "Project").

ARTICLE 1 - INTENT AND PURPOSES

1.1 This PLA is entered into in accordance with the Project Labor Agreement Act ("Act", 30 ILCS 571). It is mutually understood and agreed that the terms and conditions of this PLA are intended to promote the public interest in obtaining timely and economical completion of the Project by encouraging productive and efficient construction operations; by establishing a spirit of harmony and cooperation among the parties; and by providing for peaceful and prompt settlement of any and all labor grievances or jurisdictional disputes of any kind without strikes, lockouts, slowdowns, delays, or other disruptions to the prosecution of the work. The parties acknowledge the obligations of the Contractors and Subcontractors to comply with the provisions of the Act. The parties will work with the Contractors and Subcontractors within the parameters of other statutory and regulatory requirements to implement the Act's goals and objectives.

1.2 As a condition of the award of the contract for performance of work on the Project, IDOT's Prime Contractor and each of its Subcontractors shall execute a "Contractor Letter of Assent", in the form attached hereto as Exhibit A, prior to commencing Construction Work on the Project. The Contractor shall submit a Subcontractor's Contractor Letter of Assent to the Department prior to the Subcontractor's performance of Construction Work on the Project. Upon request copies of the applicable collective bargaining agreements will be provided by the appropriate signatory labor organization consistent with this Agreement and at the pre-job conference referenced in Article III, Section 3.1.

1.3 Each Union affiliate and separate local representing workers engaged in Construction Work on the Project in accordance with this PLA are bound to this agreement by the Illinois AFL-CIO Statewide Project Labor Agreement Committee which is the central committee established with full authority to negotiate and sign PLAs with the State on behalf of all respective crafts. Upon their signing the Contractor Letter of Assent, the Prime Contractor, each Subcontractor, and the individual Unions shall thereafter be deemed a party to this PLA. No party signatory to this PLA shall, contract or subcontract, nor permit any other person, firm, company, or entity to contract or subcontract for the performance of Construction Work for the Project to any person, firm, company, or entity that does not agree in writing to become bound for the term of this Project by the terms of this PLA prior to commencing such work and to the applicable area-wide collective bargaining agreement(s) with the Union(s) signatory hereto.

1.4 It is understood that the Prime Contractor(s) and each Subcontractor will be considered and accepted by the Unions as separate employers for the purposes of collective bargaining, and it is further agreed that the employees working under this PLA shall constitute a bargaining unit separate and distinct from all others. The parties hereto also agree that this PLA shall be applicable solely with respect to this Project, and shall have no bearing on the interpretation of any other collective bargaining agreement or as to the recognition of any bargaining unit other than for the specific purposes of this Project.

1.5 In the event of a variance or conflict, whether explicit or implicit, between the terms and conditions of this PLA and the provisions of any other applicable national, area, or local collective bargaining agreement, the terms and conditions of this PLA shall supersede and control. For any work performed under the NTL Articles of Agreement, the National Stack/Chimney Agreement, the National Cooling Tower Agreement, the National Agreement of the International Union of Elevator Constructors, and for any instrument calibration work and loop checking performed under the UA/IBEW Joint National Agreement for Instrument and Control Systems Technicians, the preceding sentence shall apply only with respect to Articles I, II, V, VI, and VII.

1.6 Subject to the provisions of paragraph 1.5 of this Article, it is the parties' intent to respect the provisions of any other collective bargaining agreements that may now or hereafter pertain, whether between the Prime Contractor and one or more of the Unions or between a Subcontractor and one or more of the Unions. Accordingly, except and to the extent of any contrary provision set forth in this PLA, the Prime Contractor and each of its Subcontractors agrees to be bound and abide by the terms of the following in order of precedence: (a) the applicable collective bargaining agreement between the Prime Contractor and one or more of the Unions made signatory hereto; (b) the applicable collective bargaining agreement between a Subcontractor and one or more of the Unions made signatory hereto; or (c) the current applicable area collective bargaining agreement for the relevant Union that is the agreement certified by the Illinois Department of Labor for purposes of establishing the Prevailing Wage applicable to the Project. The Union will provide copies of the applicable collective bargaining agreements pursuant to part (c) of the preceding sentence to the Prime Contractor. Assignments by the Contractors or Subcontractors amongst the trades shall be consistent with area practices; in the event of unresolved disagreements as to the propriety of such assignments, the provisions of Article VI shall apply.

1.7 Subject to the limitations of paragraphs 1.4 to 1.6 of this Article, the terms of each applicable collective bargaining agreement as determined in accordance with paragraph 1.6 are incorporated herein by reference, and the terms of this PLA shall be deemed incorporated into such other applicable collective bargaining agreements only for purposes of their application to the Project.

1.8 To the extent necessary to comply with the requirements of any fringe benefit fund to which the Prime Contractor or Subcontractor is required to contribute under the terms of an applicable collective bargaining agreement pursuant to the preceding paragraph, the Prime Contractor or Subcontractor shall execute all "Participation Agreements" as may be reasonably required by the Union to accomplish such purpose; provided, however, that such Participation Agreements shall, when applicable to the Prime Contractor or Subcontractor solely as a result of this PLA, be amended as reasonably necessary to reflect such fact. Upon written notice in the form of a lien of a Contractor's or Subcontractor's delinquency from any applicable fringe benefit fund, IDOT will withhold from the Contractor's periodic pay request an amount sufficient to extinguish any delinquency obligation of the Contractor or Subcontractor arising out of the Project.

1.9 In the event that the applicable collective bargaining agreement between a Prime Contractor and the Union or between the Subcontractor and the Union expires prior to the completion of this Project, the expired applicable contract's terms will be maintained until a new applicable collective bargaining agreement is ratified. The wages and fringe benefits included in any new applicable collective bargaining agreement will apply on and after the effective date of the newly negotiated collective bargaining agreement, except to the extent wage and fringe benefit retroactivity is specifically agreed upon by the relevant bargaining parties.

ARTICLE II – APPLICABILITY, RECOGNITION, AND COMMITMENTS

2.1 The term Construction Work as used herein shall include all "construction, demolition, rehabilitation, renovation, or repair" work performed by a "laborer or mechanic" at the "site of the work" for the purpose of "building" the specific structures and improvements that constitute the Project. Terms appearing within quotation marks in the preceding sentence shall have the meaning ascribed to them pursuant to 29 CFR Part 5 and Illinois labor laws.

2.2 By executing the Letters of Assent, Prime Contractor and each of its Subcontractors recognizes the Unions signatory to this PLA as the sole and exclusive bargaining representatives for their craft employees employed on the jobsite for this Project. Unions who are signatory to this PLA will have recognition on the Project for their craft.

2.3 The Prime Contractor and each of its Subcontractors retains and shall be permitted to exercise full and exclusive authority and responsibility for the management of its operations, except as expressly limited by the terms of this PLA or by the terms and conditions of the applicable collective bargaining agreement.

2.4 Except to the extent contrary to an express provision of the relevant collective bargaining agreement, equipment or materials used in the Project may be pre-assembled or pre-fabricated, and there shall be no refusal by the Union to handle, transport, install, or connect such equipment or materials. Equipment or materials delivered to the job-site will be unloaded and handled promptly without regard to potential jurisdictional disputes; any such disputes shall be handled in accordance with the provisions of this PLA.

2.5 The parties are mutually committed to promoting a safe working environment for all personnel at the job-site. It shall be the responsibility of each employer to which this PLA applies to provide and maintain safe working conditions for its employees, and to comply with all applicable federal, state, and local health and safety laws and regulations.

2.6 The use or furnishing of alcohol or drugs and the conduct of any other illegal activity at the job-site is strictly prohibited. The parties shall take every practical measure consistent with the terms of applicable collective bargaining agreements to ensure that the job-site is free of alcohol and drugs.

2.7 All parties to this PLA agree that they will not discriminate against any employee based on race, creed, religion, color, national origin, union activity, age, gender or sexual orientation and shall comply with all applicable federal, state, and local laws.

2.8 In accordance with the Act and to promote diversity in employment, IDOT will establish, in cooperation with the other parties, the apprenticeship hours which are to be performed by minorities and females on the Project. IDOT shall consider the total hours to be performed by these underrepresented groups, as a percentage of the workforce, and create aspirational goals for each Project, based on the level of underutilization for the service area of the Project (together "Project Employment Objectives"). IDOT shall provide a quarterly report regarding the racial and gender composition of the workforce on the Project.

Persons currently lacking qualifications to enter apprenticeship programs will have the opportunity to obtain skills through basic training programs as have been established by the Department. The parties will endeavor to support such training programs to allow participants to obtain the requisite qualifications for the Project Employment Objectives.

The parties agree that all Contractors and Subcontractors working on the Project shall be encouraged to utilize the maximum number of apprentices as permitted under the terms of the applicable collective bargaining agreements to realize the Project Employment Objectives.

The Unions shall assist the Contractor and each Subcontractor in efforts to satisfy Project Employment Objectives. A Contractor or Subcontractor may request from a Union specific categories of workers necessary to satisfy Project Employment Objectives. The application of this section shall be consistent with all local Union collective bargaining agreements, and the hiring hall rules and regulations established for the hiring of personnel, as well as the apprenticeship standards set forth by each individual Union.

2.9 The parties hereto agree that engineering/architectural/surveying consultants' materials testing employees are subject to the terms of this PLA for Construction Work performed for a Contractor or Subcontractor on this Project. These workers shall be fully expected to objectively and responsibly perform their duties and obligations owed to the Department without regard to the potential union affiliation of such employees or of other employees on the Project.

2.10 This Agreement shall not apply to IDOT employees or employees of any other governmental entity.

ARTICLE III - ADMINISTRATION OF AGREEMENT

3.1 In order to assure that all parties have a clear understanding of the PLA, and to promote harmony, at the request of the Unions a post-award pre-job conference will be held among the Prime Contractor, all Subcontractors and Union representatives prior to the start of any Construction Work on the Project. No later than the conclusion of such pre-job conference, the parties shall, among other matters, provide to one another contact information for their respective representatives (including name, address, phone number, facsimile number, e-mail). Nothing herein shall be construed to limit the right of the Department to discuss or explain the purpose and intent of this PLA with prospective bidders or other interested parties prior to or following its award of the job.

3.2 Representatives of the Prime Contractor and the Unions shall meet as often as reasonably necessary following award until completion of the Project to assure the effective implementation of this PLA.

3.3 Any notice contemplated under Article VI and VII of this Agreement to a signatory labor organization shall be made in writing to the Local Union with copies to the local union's International Representative.

ARTICLE IV - HOURS OF WORK AND GENERAL CONDITIONS

4.1 The standard work day and work week for Construction Work on the Project shall be consistent with the respective collective bargaining agreements. In the event Project site or other job conditions dictate a change in the established starting time and/or a staggered lunch period for portions of the Project or for specific crafts, the Prime Contractor, relevant Subcontractors and business managers of the specific crafts involved shall confer and mutually agree to such changes as appropriate. If proposed work schedule changes cannot be mutually agreed upon between the parties, the hours fixed at the time of the pre-job meeting shall prevail.

4.2 Shift work may be established and directed by the Prime Contractor or relevant Subcontractor as reasonably necessary or appropriate to fulfill the terms of its contract with the Department. If used, shift hours, rates and conditions shall be as provided in the applicable collective bargaining agreement.

4.3 The parties agree that chronic and/or unexcused absenteeism is undesirable and must be controlled in accordance with procedures established by the applicable collective bargaining agreement. Any employee disciplined for absenteeism in accordance with such procedures shall be suspended from all work on the Project for not less than the maximum period permitted under the applicable collective bargaining agreement.

4.4 Except as may be otherwise expressly provided by the applicable collective bargaining agreement, employment begins and ends at the Project site; employees shall be at their place of work at the starting time; and employees shall remain at their place of work until quitting time.

4.5 Except as may be otherwise expressly provided by the applicable collective bargaining agreement, there shall be no limit on production by workmen, no restrictions on the full use of tools or equipment, and no restrictions on efficient use of manpower or techniques of construction other than as may be required by safety regulations.

4.6 The parties recognize that specialized or unusual equipment may be installed on the Project. In such cases, the Union recognizes the right of the Prime Contractor or Subcontractor to involve the equipment supplier or vendor's personnel in supervising the setting up of the equipment, making modifications and final alignment, and performing similar activities that may be reasonably necessary prior to and during the start-up procedure in order to protect factory warranties. The Prime Contractor or Subcontractor shall notify the Union representatives in advance of any work at the job-site by such vendor personnel in order to promote a harmonious relationship between the equipment vendor's personnel and other Project employees.

4.7 For the purpose of promoting full and effective implementation of this PLA, authorized Union representatives shall have access to the Project job-site during scheduled work hours. Such access shall be conditioned upon adherence to all reasonable visitor and security rules of general applicability that may be established for the Project site at the pre-job conference or from time to time thereafter.

ARTICLE V – GRIEVANCE PROCEDURES FOR DISPUTES ARISING UNDER A PARTICULAR COLLECTIVE BARGAINING AGREEMENT

5.1 In the event a dispute arises under a particular collective bargaining agreement specifically not including jurisdictional disputes referenced in Article VI below, said dispute shall be resolved by the Grievance/Arbitration procedure of the applicable collective bargaining agreement. The resulting determination from this process shall be final and binding on all parties bound to its process.

5.2 Employers covered under this Agreement shall have the right to discharge or discipline any employee who violates the provisions of this Agreement. Such discharge or discipline by a contractor or subcontractor shall be subject to Grievance/Arbitration procedure of the applicable collective bargaining agreement only as to the fact of such violation of this agreement. If such fact is established, the penalty imposed shall not be disturbed. Work at the Project site shall continue without disruption or hindrance of any kind as a result of a Grievance/Arbitration procedure under this Article.

5.3 In the event there is a deadlock in the foregoing procedure, the parties agree that the matter shall be submitted to arbitration for the selection and decision of an Arbitrator governed under paragraph 6.8.

ARTICLE VI –DISPUTES: GENERAL PRINCIPLES

6.1 This Agreement is entered into to prevent strikes, lost time, lockouts and to facilitate the peaceful adjustment of jurisdictional disputes in the building and construction industry and to prevent waste and unnecessary avoidable delays and expense, and for the further purpose of at all times securing for the employer sufficient skilled workers.

6.2 A panel of Permanent Arbitrators are attached as addendum (A) to this agreement. By mutual agreement between IDOT and the Unions, the parties can open this section of the agreement as needed to make changes to the list of permanent arbitrators.

6.3 The PLA Jurisdictional Dispute Resolution Process ("Process") sets forth the procedures below to resolve jurisdictional disputes between and among Contractors, Subcontractors, and Unions engaged in the building and construction industry. Further, the Process will be followed for any grievance or dispute arising out of the interpretation or application of this PLA by the parties except for the prohibition on attorneys contained in 6.11. All decisions made through the Process are final and binding upon all parties.

DISPUTE PROCESS

6.4 Administrative functions under the Process shall be performed through the offices of the President and/or Secretary-Treasurer of the Illinois State Federation of Labor, or their designated representative, called the Administrator. In no event shall any officer, employee, agent, attorney, or other representative of the Illinois Federation of Labor, AFL-CIO be subject to any subpoena to appear or testify at any jurisdictional dispute hearing.

6.5 There shall be no abandonment of work during any case participating in this Process or in violation of the arbitration decision. All parties to this Process release the Illinois State Federation of Labor ("Federation") from any liability arising from its action or inaction and covenant not to sue the Federation, nor its officers, employees, agents or attorneys.

6.6 In the event of a dispute relating to trade or work jurisdiction, all parties, including the employers, Contractors or Subcontractors, agree that a final and binding resolution of the dispute shall be resolved as follows:

(a) Representatives of the affected trades and the Contractor or Subcontractor shall meet on the job site within two (2) business days after receiving written notice in an effort to resolve the dispute. (In the event there is a dispute between local unions affiliated with the same International Union, the decision of the General President, or his/her designee, as the internal jurisdictional authority of that International Union, shall constitute a final and binding decision and determination as to the jurisdiction of work.)

(b) If no settlement is achieved subsequent to the preceding Paragraph, the matter shall be referred to the local area Building & Construction Trades Council, which shall meet with the affected trades within two (2) business days subsequent to receiving written notice. In the event the parties do not wish to avail themselves of the local Building & Construction Trades Council, the parties may elect to invoke the services of their respective International Representatives with no extension of the time limitations. An agreement reached at this Step shall be final and binding upon all parties.

(c) If no settlement agreement is reached during the proceedings contemplated by Paragraphs “a” or “b” above, the matter shall be immediately referred to the Illinois Jurisdictional Dispute Process for final and binding resolution of said dispute. Said referral submission shall be in writing and served upon the Illinois State Federation of Labor, or the Administrator, pursuant to paragraph 6.4 of this agreement. The Administrator shall, within three (3) days, provide for the selection of an available Arbitrator to hear said dispute within this time period. Upon good cause shown and determined by the Administrator, an additional three (3) day extension for said hearing shall be granted at the sole discretion of the Administrator. Only upon mutual agreement of all parties may the Administrator extend the hearing for a period in excess of the time frames contemplated under this Paragraph. Business days are defined as Monday through Friday, excluding contract holidays.

6.7 The primary concern of the Process shall be the adjustment of jurisdictional disputes arising out of the Project. A sufficient number of Arbitrators shall be selected from list of approved Arbitrators as referenced Sec. 6.2 and shall be assigned per Sec. 6.8. Decisions shall be only for the Project and shall become effective immediately upon issuance and complied with by all parties. The authority of the Arbitrator shall be restricted and limited specifically to the terms and provisions of Article VI and generally to this Agreement as a whole.

6.8 The Arbitrator chosen shall be randomly selected based on the list of Arbitrators in Sec. 6.2 and geographical location of the jurisdictional dispute and upon his/her availability, and ability to conduct a Hearing within two (2) business days of said notice. The Arbitrator may issue a “bench” decision immediately following the Hearing or he/she may elect to only issue a written decision, said decision must be issued within two (2) business days subsequent to the completion of the Hearing. Copies of all notices, pleadings, supporting memoranda, decisions, etc. shall be provided to all disputing parties and the Illinois State Federation of Labor.

Any written decision shall be in accordance with this Process and shall be final and binding upon all parties to the dispute and may be a “short form” decision. Fees and costs of the arbitrator shall be divided evenly between the contesting parties except that any party wishing a full opinion and decision beyond the short form decision shall bear the reasonable fees and costs of such full opinion. The decision of the Arbitrator shall be final and binding upon the parties hereto, their members, and affiliates.

In cases of jurisdictional disputes or other disputes between a signatory labor organization and another labor organization, both of which is an affiliate or member of the same International Union, the matter or dispute shall be settled in the manner set forth by their International Constitution and/or as determined by the International Union’s General President whose decision shall be final and binding upon all parties. In no event shall there be an abandonment of work.

6.9 In rendering a decision, the Arbitrator shall determine:

(a) First, whether a previous agreement of record or applicable agreement, including a disclaimer agreement, between National or International Unions to the dispute or agreements between local unions involved in the dispute, governs;

(b) Only if the Arbitrator finds that the dispute is not covered by an appropriate or applicable agreement of record or agreement between the crafts to the dispute, he shall then consider the established trade practice in the industry and prevailing practice in the locality. Where there is a previous decision of record governing the case, the Arbitrator shall give equal weight to such decision of record, unless the prevailing practice in the locality in the past ten years favors one craft. In that case, the Arbitrator shall base his decision on the prevailing practice in the locality. Except, that if the Arbitrator finds that a craft has improperly obtained the prevailing practice in the locality through raiding, the undercutting of wages or by the use of vertical agreements, the Arbitrator shall rely on the decision of record and established trade practice in the industry rather than the prevailing practice in the locality; and,

(c) Only if none of the above criteria is found to exist, the Arbitrator shall then consider that because efficiency, cost or continuity and good management are essential to the well being of the industry, the interests of the consumer or the past practices of the employer shall not be ignored.

6.10 The Arbitrator shall set forth the basis for his/her decision and shall explain his/her findings regarding the applicability of the above criteria. If lower ranked criteria are relied upon, the Arbitrator shall explain why the higher-ranked criteria were not deemed applicable. The Arbitrator's decision shall only apply to the Project. Agreements of Record, for other PLA projects, are applicable only to those parties signatory to such agreements. Decisions of Record are those that were either attested to by the former Impartial Jurisdictional Disputes Board or adopted by the National Arbitration Panel.

6.11 All interested parties, as determined by the Arbitrator, shall be entitled to make presentations to the Arbitrator. Any interested labor organization affiliated to the PLA Committee and party present at the Hearing, whether making a presentation or not, by such presence shall be deemed to accept the jurisdiction of the Arbitrator and to agree to be bound by its decision. In addition to the representative of the local labor organization, a representative of the labor organization's International Union may appear on behalf of the parties. Each party is responsible for arranging for its witnesses. In the event an Arbitrator's subpoena is required, the party requiring said subpoena shall prepare the subpoena for the Arbitrator to execute. Service of the subpoena upon any witness shall be the responsibility of the issuing party.

Attorneys shall not be permitted to attend or participate in any portion of a Hearing.

The parties are encouraged to determine, prior to Hearing, documentary evidence which may be presented to the Arbitrator on a joint basis.

6.12 The Order of Presentation in all Hearings before an Arbitrator shall be

I. Identification and Stipulation of the Parties
II. Unions(s) claiming the disputed work presents its case
III. Union(s) assigned the disputed work presents its case
IV. Employer assigning the disputed work presents its case
V. Evidence from other interested parties (i.e., general contractor, project manager, owner)
VI. Rebuttal by union(s) claiming the disputed work
VII. Additional submissions permitted and requested by Arbitrator
VIII. Closing arguments by the parties

6.13 All parties bound to the provisions of this Process hereby release the Illinois State Federation of Labor and IDOT, their respective officers, agents, employees or designated representatives, specifically including any Arbitrator participating in said Process, from any and all liability or claim, of whatsoever nature, and specifically incorporating the protections provided in the Illinois Arbitration Act, as amended from time to time.

6.14 The Process, as an arbitration panel, nor its Administrator, shall have any authority to undertake any action to enforce its decision(s). Rather, it shall be the responsibility of the prevailing party to seek appropriate enforcement of a decision, including findings, orders or awards of the Arbitrator or Administrator determining non-compliance with a prior award or decision.

6.15 If at any time there is a question as to the jurisdiction of the Illinois Jurisdictional Dispute Resolution Process, the primary responsibility for any determination of the arbitrability of a dispute and the jurisdiction of the Arbitrator shall be borne by the party requesting the Arbitrator to hear the underlying jurisdictional dispute. The affected party or parties may proceed before the Arbitrator even in the absence or one or more stipulated parties with the issue of jurisdiction as an additional item to be decided by the Arbitrator. The Administrator may participate in proceedings seeking a declaration or determination that the underlying dispute is subject to the jurisdiction and process of the Illinois Jurisdictional Dispute Resolution Process. In any such proceedings, the non-prevailing party and/or the party challenging the jurisdiction of the Illinois Jurisdictional Dispute Resolution Process shall bear all the costs, expenses and attorneys' fees incurred by the Illinois Jurisdictional Dispute Resolution Process and/or its Administrator in establishing its jurisdiction.

ARTICLE VII - WORK STOPPAGES AND LOCKOUTS

7.1 During the term of this PLA, no Union or any of its members, officers, stewards, employees, agents or representatives shall instigate, support, sanction, maintain, or participate in any strike, picketing, walkout, work stoppage, slow down or other activity that interferes with the routine and timely prosecution of work at the Project site or at any other contractor's or supplier's facility that is necessary to performance of work at the Project site. Hand billing at the Project site during the designated lunch period and before commencement or following conclusion of the established standard workday shall not, in itself, be deemed an activity that interferes with the routine and timely prosecution of work on the Project.

7.2 Should any activity prohibited by paragraph 7.1 of this Article occur, the Union shall undertake all steps reasonably necessary to promptly end such prohibited activities.

7.2.A No Union complying with its obligations under this Article shall be liable for acts of employees for which it has no responsibility or for the unauthorized acts of employees it represents. Any employee who participates or encourages any activity prohibited by paragraph 7.1 shall be immediately suspended from all work on the Project for a period equal to the greater of (a) 60 days; or (b) the maximum disciplinary period allowed under the applicable collective bargaining agreement for engaging in comparable unauthorized or prohibited activity.

7.2.B Neither the PLA Committee nor its affiliates shall be liable for acts of employees for which it has no responsibility. The principal officer or officers of the PLA Committee will immediately instruct, order and use the best efforts of his office to cause the affiliated union or unions to cease any violations of this Article. The PLA Committee in its compliance with this obligation shall not liable for acts of its affiliates. The principal officer or officers of any involved affiliate will immediately instruct, order or use the best effort of his office to cause the employees the union represents to cease any violations of this Article. A union complying with this obligation shall not be liable for unauthorized acts of employees it represents. The failure of the Contractor to exercise its rights in any instance shall not be deemed a waiver of its rights in any other instance.

During the term of this PLA, the Prime Contractor and its Subcontractors shall not engage in any lockout at the Project site of employees covered by this Agreement.

7.3 Upon notification of violations of this Article, the principal officer or officers of the local area Building and Construction Trades Council, and the Illinois AFL-CIO Statewide Project Labor Agreement Committee as appropriate, will immediately instruct, order and use their best efforts to cause the affiliated union or unions to cease any violations of this Article. A Trades Council and the Committee otherwise in compliance with the obligations under this paragraph shall not be liable for unauthorized acts of its affiliates.

7.4 In the event that activities in violation of this Article are not immediately halted through the efforts of the parties, any aggrieved party may invoke the special arbitration provisions set forth in paragraph 7.5 of this Article.

7.5 Upon written notice to the other involved parties by the most expeditious means available, any aggrieved party may institute the following special arbitration procedure when a breech of this Article is alleged:

7.5.A The party invoking this procedure shall notify the individual designated as the Permanent Arbitrator pursuant to paragraph 6.8 of the nature of the alleged violation; such notice shall be by the most expeditious means possible. The initiating party may also furnish such additional factual information as may be reasonably necessary for the Permanent Arbitrator to understand the relevant circumstances. Copies of any written materials provided to the arbitrator shall also be contemporaneously provided by the most expeditious means possible to the party alleged to be in violation and to all other involved parties.

7.5.B Upon receipt of said notice the Permanent Arbitrator shall set and hold a hearing within twenty-four (24) hours if it is contended the violation is ongoing, but not before twenty-four (24) hours after the written notice to all parties involved as required above.

7.5.C The Permanent Arbitrator shall notify the parties by facsimile or any other effective written means, of the place and time chosen by the Permanent Arbitrator for this hearing. Said hearing shall be completed in one session. A failure of any party or parties to attend said hearing shall not delay the hearing of evidence or issuance of an Award by the Permanent Arbitrator.

7.5.D The sole issue at the hearing shall be whether a violation of this Article has, in fact, occurred. An Award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without a written opinion. If any party desires a written opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the Award. The Permanent Arbitrator may order cessation of the violation of this Article, and such Award shall be served on all parties by hand or registered mail upon issuance.

7.5.E Such Award may be enforced by any court of competent jurisdiction upon the filing of the Award and such other relevant documents as may be required. Facsimile or other hardcopy written notice of the filing of such enforcement proceedings shall be given to the other relevant parties. In a proceeding to obtain a temporary order enforcing the Permanent Arbitrator's Award as issued under this Article, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the Permanent Arbitrator's Award shall be served on all parties by hand or by delivery to their last known address or by registered mail.

7.6 Individuals found to have violated the provisions of this Article are subject to immediate termination. In addition, IDOT reserves the right to terminate this PLA as to any party found to have violated the provisions of this Article.

7.7 Any rights created by statue or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance therewith are hereby waived by parties to whom they accrue.

7.8 The fees and expenses of the Permanent Arbitrator shall be borne by the party or parties found in violation, or in the event no violation is found, such fees and expenses shall be borne by the moving party.

ARTICLE VIII – TERMS OF AGREEMENT

8.1 If any Article or provision of this Agreement shall be declared invalid, inoperative or unenforceable by operation of law or by any of the above mentioned tribunals of competent jurisdiction, the remainder of this Agreement or the application of such Article or provision to persons or circumstances other than those as to which it has been held invalid, inoperative or unenforceable shall not be affected thereby.

8.2 This Agreement shall be in full force as of and from the date of the Notice of Award until the Project contract is closed.

8.3 This PLA may not be changed or modified except by the subsequent written agreement of the parties. All parties represent that they have the full legal authority to enter into this PLA. This PLA may be executed by the parties in one or more counterparts.

8.4 Any liability arising out of this PLA shall be several and not joint. IDOT shall not be liable to any person or other party for any violation of this PLA by any other party, and no Contractor or Union shall be liable for any violation of this PLA by any other Contractor or Union.

8.5 The failure or refusal of a party to exercise its rights hereunder in one or more instances shall not be deemed a waiver of any such rights in respect of a separate instance of the same or similar nature.

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Addendum A

IDOT Slate of Permanent Arbitrators

1. Bruce Feldacker
2. Thomas F. Gibbons
3. Edward J. Harrick
4. Brent L. Motchan
5. Robert Perkovich
6. Byron Yaffee
7. Glenn A. Zipp

Execution Page

Illinois Department of Transportation

_____
Omer M. Osman, Director of Highways

_____
Michael A. Forti, Chief Counsel

_____ _____
Erica J. Borggren, Acting Secretary (Date)

Illinois AFL-CIO Statewide Project Labor Agreement Committee, representing the Unions listed below:

_____ _____
(Date)

List Unions:

****RETURN WITH BID****

Exhibit A - Contractor Letter of Assent

_____
(Date)

To All Parties:

In accordance with the terms and conditions of the contract for Construction Work on [Contract No. **60L70**], this Letter of Assent hereby confirms that the undersigned Prime Contractor or Subcontractor agrees to be bound by the terms and conditions of the Project Labor Agreement established and entered into by the Illinois Department of Transportation in connection with said Project.

It is the understanding and intent of the undersigned party that this Project Labor Agreement shall pertain only to the identified Project. In the event it is necessary for the undersigned party to become signatory to a collective bargaining agreement to which it is not otherwise a party in order that it may lawfully make certain required contributions to applicable fringe benefit funds, the undersigned party hereby expressly conditions its acceptance of and limits its participation in such collective bargaining agreement to its work on the Project.

_____
(Authorized Company Officer)

_____
(Company)

****RETURN WITH BID****

REQUIRED CONTRACT PROVISIONS
FEDERAL-AID CONSTRUCTION CONTRACTS

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, 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.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding $10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

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, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) 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 provisions of the Americans with 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 contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its 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, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program 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 minorities and women.

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 minorities and women 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 employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women 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, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such 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 its 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 their avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

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. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

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 employees who are minorities and women 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 good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. 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 good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith 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 contracting agency 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 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 minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. 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 contracting agency.

8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

9. 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. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor 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 DOT-assisted contracts. 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 contracting agency deems appropriate.

11. 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 the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours 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; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency 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. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of $10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. Davis-Bacon and Related Act Provisions

This section is applicable to all Federal-aid construction projects exceeding $2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics 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 issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, 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 29 CFR 5.5(a)(4). 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. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH–1321) 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.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), 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 Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The 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.

(3) In the event the contractor, the laborers or mechanics to be employed in the 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 questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination 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.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. 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 shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs 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.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor 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, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, 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 contracting agency 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.

3. Payrolls and basic records

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of 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. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) 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 shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g. , the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH–347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each 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 Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) 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 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, 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 FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action 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.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

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 U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or 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 Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen 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 worker 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 on 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 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's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

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 journeymen 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 determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

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 U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman 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 wage rate on the wage determination which provides for less than full fringe benefits for apprentices. 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.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor 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. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

d. 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.

5. Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

6. Subcontracts. The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for

debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 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 U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of $100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the 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 or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys 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 (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

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 contracting agency. 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 contractor's own organization (23 CFR 635.116).

a. The term “perform work with its own organization” refers to workers employed or leased 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 or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

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 or propose 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 VI 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 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 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 contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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 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. 3704).

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.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

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, Form FHWA-1022 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:

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 under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost $25,000 or more – as defined in 2 CFR Parts 180 and 1200.

1**. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier 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 first tier 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 first tier 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 contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier 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," "participant," "person," "principal," and "voluntarily excluded,"

as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first 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 entering into this transaction.

g. The prospective first tier 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 Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the $25,000 threshold.

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 is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective 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.

* * * * *

2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;

(2) Have not within a three-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;

(3) 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 (a)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. **Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost $25,000 or more - 2 CFR Parts 180 and 1200)

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," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

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 exceeding the $25,000 threshold.

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 is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.

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 dealings.

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.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

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 participating in covered transactions 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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XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is 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 its bid or proposal that the participant 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.